PROJECT MANUAL

HVAC UPGRADES AT OCEAN ACRES ELEMENTARY SCHOOL

489 NAUTILUS DRIVE, STAFFORD TOWNSHIP, NEW JERSEY 08050

FOR THE

STAFFORD TOWNSHIP BOARD OF EDUCATION
250 NORTH MAIN STREET
MANAHAWKIN, NEW JERSEY 08050

ARCHITECT'S PROJECT NUMBER: 24K069

FOR BID DATE: 10-10-2025

spiezle

HVAC UPGRADES AT OCEAN ACRES ELEMENTARY SCHOOL

FOR THE

STAFFORD TOWNSHIP BOARD OF EDUCATION

250 NORTH MAIN STREET

MANAHAWKIN, NEW JERSEY 08050

ARCHITECTS/PLANNERS:

SPIEZLE ARCHITECTURAL GROUP, INC. **21AC00063000**

1395 YARDVILLE HAMILTON SQUARE ROAD **21AI01505400**
SUITE 2A **21AI01674400**
HAMILTON, NEW JERSEY 08691 **21AI01170100**
21AI01564200
21AI01046700
21AI01784200 _____

MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION ENGINEER:

SPIEZLE GROUP INC. **24GE04346700**
1395 YARDVILLE HAMILTON SQUARE ROAD
SUITE 2A
HAMILTON, NEW JERSEY 08691 _____

HVAC UPGRADES AT OCEAN ACRES ELEMENTARY SCHOOL

FOR THE

STAFFORD TOWNSHIP BOARD OF EDUCATION
250 NORTH MAIN STREET
MANAHAWKIN, NEW JERSEY 08050

ARCHITECT'S COMMISSION NUMBER: 24K069

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

END OF SECTION 000110

SECTION 000115 - LIST OF DRAWING SHEETS

LIST OF DRAWINGS CONSIST OF THE FOLLOWING CONTRACT DRAWINGS AND OTHER DRAWINGS OF TYPE INDICATED:

GENERAL

CS.1 COVER SHEET

CS.2 NOTES, ABBREVIATIONS, CODE PLAN AND LIST OF DRAWINGS

CS.3 PENETRATION FIRESTOPPING DETAILS

DEMOLITION

D1.1 PARTIAL DEMOLITION FLOOR PLAN WING A

D1.2 PARTIAL DEMOLITION FLOOR PLAN WING B

D1.3 PARTIAL DEMOLITION FLOOR PLAN WING C

D1.4 PARTIAL DEMOLITION FLOOR PLAN WING D

D1.5 PARTIAL DEMOLITION FLOOR PLAN WING E

ARCHITECTURAL

A1.1 PARTIAL FLOOR PLAN WING A

A1.2 PARTIAL FLOOR PLAN WING B

A1.3 PARTIAL FLOOR PLAN WING C

A1.4 PARTIAL FLOOR PLAN WING D

A1.5 PARTIAL FLOOR PLAN WING E

A3.1 PARTIAL ROOF PLAN WING A

A3.2 PARTIAL ROOF PLAN WING B

A3.3 PARTIAL ROOF PLAN WING C

A3.4 PARTIAL ROOF PLAN WING D

A3.5 PARTIAL ROOF PLAN WING E

A8.1 CASEWORK ELEVATIONS

HEATING VENTILATION AND AIR CONDITIONING

M0.0 MECHANICAL NOTES, ABBREVIATIONS AND LEGEND

MD1.1 PARTIAL DEMOLITION FLOOR PLAN WING A

MD1.2 PARTIAL DEMOLITION FLOOR PLAN WING B

MD1.3 PARTIAL DEMOLITION FLOOR PLAN WING C

MD1.4 PARTIAL DEMOLITION FLOOR PLAN WING D

MD1.5 PARTIAL DEMOLITION FLOOR PLAN WING E

M1.1 PARTIAL NEW WORK FLOOR PLAN WING A

M1.2 PARTIAL NEW WORK FLOOR PLAN WING B

M1.3 PARTIAL NEW WORK FLOOR PLAN WING C

M1.4 PARTIAL NEW WORK FLOOR PLAN WING D

M1.5 PARTIAL NEW WORK FLOOR PLAN WING E

M4.0 MECHANICAL EQUIPMENT SCHEDULES

M4.1 MECHANICAL VENTILATION SCHEDULES

M5.0 MECHANICAL DETAILS

ELECTRICAL

E1.1 ELECTRICAL PARTIAL FLOOR PLAN - WING A

E1.2 ELECTRICAL PARTIAL FLOOR PLAN - WING B

E1.3 ELECTRICAL PARTIAL FLOOR PLAN - WING C

E1.4 ELECTRICAL PARTIAL FLOOR PLAN - WING D

E1.5 ELECTRICAL PARTIAL FLOOR PLAN - WING E

E4.0 ELECTRICAL SCHEDULES

E4.1 ELECTRICAL SCHEDULES

THE ARCHITECT MAY FURNISH ADDITIONAL DRAWINGS AS MAY BE REQUIRED FOR FURTHER EXPLANATION OF DETAILS FOR WORK UNDER THIS CONTRACT, BUT THESE DRAWINGS WILL NOT INCLUDE SHOP DRAWINGS. SHOP DRAWINGS SHALL BE COMPLETED AND SUBMITTED FOR ARCHITECT'S REVIEW FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS PRIOR TO THE STARTING OF WORK BY THE CONTRACTOR, AS SPECIFIED HEREIN.

END OF SECTION 000115

SECTION 001113 - ADVERTISEMENT FOR BIDS

NOTICE IS HEREBY GIVEN that sealed bid proposals will be received by Stafford Township Board of Education (hereinafter referred to as Owner) Manahawkin, New Jersey 08050 for:

HVAC Upgrades at Ocean Acres Elementary School

for the

Stafford Township Board of Education
250 North Main Street
Manahawkin, New Jersey 08050

IN ACCORDANCE WITH DRAWINGS AND PROJECT MANUALS, COMMISSION NO. 24K069, dated **10-10-2025** together with all work incidental thereto as prepared by the Spiezle Architectural Group, Inc., 1395 Yardville Hamilton Square Road, Suite 2A, Hamilton, New Jersey08691

Sealed bids for the above must be received as a SINGLE LUMP SUM BID by the Stafford Township Board of Education, Lourdes LaGuardia, Business Administrator at 250 North Main Street Manahawkin, New Jersey 08050 by 11:00 am, prevailing time on 11-13-2025, at which time all bids will be opened and read to the public immediately thereafter.

Neither the Owner, nor the Architect will assume any responsibility for bids mailed or misdirected in delivery. No bid may be withdrawn for a period of sixty (60) calendar days from the opening of the bids.

The Owner reserves the right to reject all bids pursuant to applicable law and waive any minor immaterial informalities in the bidding process in accordance with the law. The Contract, if awarded, shall be awarded to the lowest responsible bidder whose bid is responsive in all material respects to the bid requirements. No bid shall be deemed accepted until the adoption of a formal resolution by the Owner.

Complete sets of Bidding Documents will be available on Spiezle's website, at no cost, at www.spiezle.com/current-bidding/. You will be required to fill out the online contact form to obtain the bidding documents. Should you have any questions, please contact the Architect's office at bidding@spiezle.com.

All bidders must use and complete all bid forms provided in the manner designated and must comply with all requirements contained in the instructions and specifications. Bids shall be placed in a sealed envelope with the name of the project clearly marked on the front of the envelope and accompanied by a bid guarantee in the form of a Certified Check, Cashier's Check, or Bid Bond in the amount of Ten Percent 10% of the bid, but not more than $20,000.

A non-mandatory pre-bid conference will be held at the Project Site, 489 Nautilus Drive, Stafford Township, New Jersey 08050 at 3:30 pm on 10-16-2025, followed by a tour of the project site, prevailing time for the purpose of considering questions posed by the bidders. Due to the special nature of the work involved that can only be seen by an in-depth visitation, the attendance of all the bidders is requested and STRONGLY ENCOURAGED as an

integral and important element of the bidding process so that all bidders have an equal understanding of the scope of work involved.

SINGLE-OVERALL CONTRACT BID

Sealed Bid Proposals shall be received as follows:

The bidder shall be classified by the New Jersey Department of the Treasury, Division of Property Management and Construction (DPMC) in the following trade(s):

C008 - GENERAL CONSTRUCTION, C009 - GENERAL CONSTRUCTION / ALTERATION AND ADDITIONS, OR C032 - HVACR

Subcontractors named in the Form of Bid Proposal for Structural Steel, Plumbing, Heating Ventilating and Air Conditioning, and/or Electric, who perform any work on the Project must be prequalified prior to the submission of bids, pursuant to the State of New Jersey Division of Property Management and Construction (DPMC). Each bid must be accompanied by proof of Contractor's DPMC classification status.

Bidders are required to comply with requirements of N.J.S.A. 10:5-1 et seq., "The Law Against Discrimination," and affirmative action, N.J.S.A. 10:5-31 et seq. and N.J.AC. 17:27-1 et seq.

All bidders and their subcontractors shall be registered with the New Jersey Department of Labor and Workforce Development, pursuant to the Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq. It is encouraged that all bids be accompanied by a Certificate issued by the New Jersey Department of Labor and Workforce Development, pursuant to the Public Works Contractor Registration Act to the Bidder and all subcontractors named in the Contractor's bid. If not included with the bid, these documents must be submitted prior to contract award.

Pursuant to N.J.S.A. 52:32-44, it is encouraged that all bids include a New Jersey Business Registration Certificate issued by the New Jersey Department of Treasury, Division of Revenue of the Bidder and include that of all subcontractors named in the Contractor's bid. If not included with the bid, these documents must be submitted prior to contractaward.

ISSUED BY ORDER OF: Stafford Township Board of Education
Manahawkin, Ocean County, New Jersey
Lourdes LaGuardia
Business Administrator

END OF SECTION 001113

SECTION 002113 - INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.01 DEFINITIONS

A. Refer to AIA A201 for terms defined in the General Conditions of the Contract for Construction.

B. Refer to Section 006212 - Supplementary Conditions - AIA A201-2017 for terms defined in the Supplementary Conditions.

C. **Addenda** are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

D. A **Bid** is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

E. The **Base Bid** is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

F. An **Alternate Bid** (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

G. A **Unit Price** is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

H. A **Bidder** is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

I. Whenever in the Project Manual the following terms, or pronouns in place of them are used, their intent and meaning shall be interpreted as follows:

J. Project: The term “Project” as used in the Contract Documents refers to:
HVAC Upgrades at Ocean Acres Elementary School
489 Nautilus Drive, Stafford Township, New Jersey 08050

K. Owner: The term “Owner” as used in the Contract Documents refers to:
Stafford Township Board of Education
250 North Main Street
Manahawkin, New Jersey 08050
(P) (609) 978-5700

L. Architect: The term “Architect” as used in the Contract Documents refers to:
Spiezle Architectural Group, Inc.
1395 Yardville Hamilton Square Road
Suite 2A
Hamilton, New Jersey 08691

(P) (866) 974-7666

M. Construction Manager: The term “Construction Manager” as used in the Contract Documents refers to:
New Road Construction Management Company Inc.
1876 Greentree Road
Cherry Hill, New Jersey 08003
(P) (856) 424-8888

PART 2 BIDDING DOCUMENTS

2.01 DRAWINGS AND PROJECT MANUAL

A. The Drawings and Project Manual are to provide for the complete construction of the Project and are intended to complement and supplement each other. Any work required by either of them, and not by the other; shall be performed as if denoted both ways. Any work required which is not denoted in the Project Manual or on the Drawings because of an obvious omission but which is nevertheless necessary for the proper performance of the Project, such work shall be performed as fully as if it were described and delineated.

2.02 INTERPRETATIONS

A. No oral interpretation will be made to any Bidders as to the meaning of the Drawings and Project Manual. Should any questions arise as to the true meaning of any item noted on the Drawings, Specifications, or other Contract Documents, the Bidder will immediately forward a request in writing to the Architect for interpretation as soon as such question arises on Form 006010 - Request for Information provided in Division “00” Bidding and Contract Requirements. Interpretations will be made in the form of Addenda published in an official newspaper of the board of education, provided to any person who has submitted a Bid or who has received a Bid package. All such Addenda shall become part of the Contract Documents. In order to be given consideration and timely issuance of Addenda, if any, written requests for interpretation are requested at least ten (10) business days, Saturdays, Sundays, and Holidays excepted prior to the date fixed for the opening of Bids. Notice of revisions or Addenda to the advertisement or Specifications will be sent in writing, via certified mail, certified email, certified facsimile transmission or delivery service to all persons who have picked up a copy of the Bidding documents. Notice shall be provided no later than seven (7) days, Saturday, Sundays, or holidays excepted, prior to the date for acceptance of Bids to any person who has submitted a Bid or who received a Bid package. It shall be the responsibility of the Bidder to ascertain that they have received all properly issued Addenda prior to submitting its Bid. Failure of a Bidder to receive legally issued notice of any Addenda when good faith notice is sent or delivered in accordance with N.J.S.A. 18A:18A-21(c) shall not be considered failure by the Owner to provide notice and shall not relieve a Bidder from any obligation under its Bid. All Addenda shall become part of the Contract documents and shall be acknowledged by the Bidder in the Bid. In the event the Owner is unable to provide notice within the time required, or otherwise fails to provide notices, the Owner shall not accept Bids and shall re-advertise for Bids. The Architect's interpretations or corrections thereof shall be final.

2.03 QUALITY OF PRODUCTS/GOODS USED

A. In accordance with N.J.S.A. 18A:18A-20, “American goods and products to be used wherever possible”, only manufactured and farm products of the United States, wherever available, shall be used in this project.

B. All products and goods used in the project shall be new and covered by the applicable manufacturer's warranty. Where a brand name is specified in the Specifications, the Bidder may use an equivalent brand, provided the procedures set forth in the specifications are followed. The Architect and Owner shall approve such substitution.

C. Quality Control: During the term of this project, the contractor will have in place a suitable quality control and quality assurance program and an appropriate safety and health plan.

D. Discrimination on the basis of disability for the purchase of goods and services is prohibited. Bidders are expected to have read and understand the language of the Americans with Disabilities Act and are required to agree that the provisions of Title II of the Act and are made a part of this Contract. The Contractor is obligated to comply with the Americans with Disabilities Act of 1990 (ADA) including the changes made by the ADA Amendments Act of 2008 (P.L. Law 110-325) effective January 1, 2009.

2.04 ADVERTISEMENT FOR BIDS

A. In accordance with section 001113 - Advertisement for Bids, proposals will be received by the Owner for the performance of the project designated in the Advertisement for Bids and further described in section 011000 - Summary. Bids shall cover all costs of any nature, including those which are incidental to and arise from the work. In explanation but not in limitation thereof, these costs shall include the costs of all work, labor, materials, equipment, transportation and cost of anything else necessary to perform and complete the project in the manner and within the time required by the Specifications, all incidental expenses in connection therewith, all costs on account of loss due to damage or destruction of the project caused by its action or inaction, and any additional expenses for unforeseen difficulties encountered, for settlement of damages and for replacement of defective work and materials. Conditions, limitations, or provisions attached by the Bidder to the Proposal shall be cause for its rejection.

B. Prior to submitting a Bid, all Bidders shall become familiar with the Advertisement for Bids, Instructions to Bidders, General and Supplementary Conditions, Specifications, Drawings, and Addenda. It shall also be the responsibility of every Bidder to investigate the site of the project and make such examination as necessary to satisfy itself regarding the character and amount of work involved. All Bidders shall determine that necessary labor and equipment can be secured and that the materials it proposes to use will comply with the requirements contained in the Specifications and can be obtained by the Bidder in the quantities and at the time required. Appointments for inspection of the site can be arranged by contacting the **Director of Facilities, Mike Nikola at (609) 978-5700.**

C. The Project Manual, Drawings, and Addenda shall be considered as a whole and shall not be separated during the Bidding or construction period. Division of Project Manual into “divisions” and “sections” is solely for organization and is not intended to define trade responsibilities unless specifically stated. Every Contractor shall be held responsible for reviewing and understanding the relationship of its work by becoming thoroughly familiar with the Drawings, Project Manual, and Addenda of the

Contract. Every Contractor shall be responsible for its own work and, if it divides the Drawings, Project Manual, and Addenda for Subcontractors or material suppliers, it does so at its own risk.

D. Bidders are cautioned to carefully read the complete Drawings and Project Manual to acquaint themselves with requirements therein necessitating installation work by one Contractor of materials or equipment furnished by another Contractor required to complete the entire Project. Bidders should also note all cases where it is specified that labor, materials, or both are to be omitted by one Contractor and are to be provided by another Contractor identified therein. It is understood that the various Bidders have included such work in their Bids, even though the same is not specifically mentioned within the Divisions and Sections of the Specifications upon which they are Bidding.

E. Bidding shall be in conformance with applicable New Jersey Laws and with the following applicable requirements:
   1. N.J.S.A. 18A:18A-1 et seq., the “Public School Contracts Law”.

F. Award of a Contract to a Bidder is subject to the availability and appropriation of sufficient funds by the Owner pursuant to applicable regulations and requirements.

2.05 PRE-BID MEETING

A. A non-mandatory pre-Bid conference and walk through will be started at the project site, 489 Nautilus Drive, Stafford Township, New Jersey 08050 at the date and time specified in Section 001113 - Advertisement for Bids. Due to the special nature of the work involved the attendance of all Bidders is requested and STRONGLY ENCOURAGED as an integral and important element of the Bidding process so that all Bidders have an equal understanding of the scope of work involved.

2.06 CLASSIFICATION OF BIDDERS

A. Pursuant to N.J.S.A. 18A:18A-26 to 18A:18A-33 and N.J.S.A. 52:35-1., all Bidders on any Contract for public work in which the entire cost of the project exceeds $20,000.00 must be prequalified by the Department of Treasury, Division of Property Management and Construction (DPMC) as to character and amount of public work on which they may submit Bids. No person shall be qualified to Bid on any public work Contract with the Owner if it has not submitted a statement to the Department of Treasury, Division of Property Management and Construction which fully discloses the Bidder’s financial ability, the adequacy of its plant and equipment, its organization and prior experience, and such other pertinent and material facts which may impact on the Bidder’s performance on the Project within a period of one year preceding the date of opening of the Bids for such Contract.

B. All Bidders shall furnish satisfactory evidence that it and its Subcontractors have sufficient means and experience in the type of work to complete the project in accordance with the Specifications. A Subcontractor listing and Bidder’s personnel and experience sheet shall be submitted to the Owner as part of the Bidding documents. Where the Bidder intends to subcontract any portion of the work to one or more of the major trades for (General Construction, Structural Steel; Plumbing; Heating, Ventilating and Air-Conditioning; and/or Electrical), the Subcontractor(s) shall be classified to perform the work and the Bidder shall submit the requisite prequalification

documentation pertaining to the Subcontractor(s) in accordance with paragraph B above.

C. For every contract for public work that exceeds $20,000.00, the Owner shall, upon completion thereof, report to the Department of Treasury, Division of Property Management and Construction as to the Contractor's performance and shall also furnish such report from time to time during performance if the Contractor is then in default.

2.07 PUBLIC WORKS CONTRACTOR REGISTRATION ACT (N.J.S.A. 34:11-56.48 ET.SEQ.)

A. All Contractors as described in N.J.S.A. 34:11-56.48 et seq. submitting a Bid for this project, and any Subcontractor named in the Bid, shall be registered with the Department of Labor and Workforce Development in accordance with N.J.S.A. 34:11-56.48 et seq. at the time of Bid submission. All Bidders are requested to submit a copy of the Registration Certificate of the Bidder and all Subcontractors named in the Bid with the Bid; such certificates are required to be submitted prior to award of Contract.

2.08 OBLIGATION OF THE BIDDER

A. At the time of the opening of the Bids, each Bidder will be presumed to have read and become thoroughly familiar with the Advertisement for Bids, Instructions to Bidders, Drawings, Specifications, and Addenda. The failure or omission of any Bidder to receive or examine any form, instrument, or document, or to visit the site and acquaint themselves with the conditions there existing, shall not relieve the Bidder from its obligation to furnish all the necessary labor, materials, and other conditions and requirements of the Contract Documents to complete the project at the Bid price. A claim of mistake or omission will likewise not excuse a Bidder from any obligation under its Bid. The submission of a Bid will be considered conclusive evidence that the Bidder has made such an examination.

B. The Owner reserves the right to hire an Architect to act as its representative for the purpose of administering the contract. The Contractor is obligated to follow any directive or order that the Architect may issue as if the directive or order were issued by the Owner.

PART 3 BIDDING PROCEDURES

3.01 BID DOCUMENT SUBMISSION

A. The Bid document submission consists of the following documents:
   1. 004000 - Bid Document Checklist
   2. 004100 - Form of Bid Proposal - Single Prime
   3. 004320 - Form of Bid Bond
   4. 004325 - Form of Consent of Surety
   5. 005611 - Form of Performance Bond
   6. 005612 - Form of Payment Bond
   7. 004510 - Statement of Bidder's Qualifications
   8. 004525 - Form of Non-Collusive Affidavit
   9. 004530 - Ownership Disclosure Statement

10. 004535 - Certifications of No Material Adverse Change in Status
11. 004540 - Bidder's Certification Regarding Debarment/Disqualification/Suspension
12. 004545 - Certification of Federal Non-Debarment
13. 004550 - Contractor's Equipment Certification
14. 004560 - Affirmative Action Language of Exhibit B and Affirmative Action Acknowledgement
15. 004570 - Political Contribution Disclosure Form
16. 004580 - Sworn Contractor Certification Requirements
17. Department of Labor - Contractor Registration
18. Business Registration Certificate
19. Certificate of Authority to Transact Business in NJ
20. DPMC Notice of Classification
21. DPMC Form 701 - Uncompleted Contracts
22. Contractor Trade License

3.02 BID DOCUMENT CHECKLIST

A. The Bid Document Checklist is used to organize what documents are submitted with the Bid. The Contractor submitting the Bid should initial each section or form being submitted to ensure that their Bid submission is complete.

B. Filling out the Bid Document Checklist does not relieve the Contractor from submitting all required forms and documents required by law to be submitted with a Bid.

C. Some documents requested to be submitted with the Bid are only required to be submitted prior to award of the Contract. It is suggested that Contractors submit these with the Bid.

3.03 PREPARATION OF FORM OF BID PROPOSAL

A. Bidders shall comply with the requirements contained in the Project Manual.

B. Bids must be submitted on Section 004100 - Form of Bid Proposal - Single Prime furnished by the Owner. Where the Bidder is a corporation, LLC, or a partnership, the person submitting the Bid must certify that he is duly authorized to submit a Bid on behalf of the corporation or partnership. The corporate seal should be affixed to the Bid. Alternative Bid forms will not be accepted unless otherwise authorized in the Bidding documents. No conditions, limitations, or provision may be placed on a Bid.

C. Where alternates are specified, the Bidder shall indicate the amount of the alternate(s) to be added to or deducted from the base Bid. If an alternate item will not result in an increase or decrease in the base Bid, the Bidder shall clearly so indicate by stating either “zero (0)” or “no change”. Failure to Bid an alternate, where specified, by leaving an alternate amount blank or stating “No Bid” shall be considered a material defect, resulting in the rejection of Bids.

D. Bids shall be enclosed in a sealed opaque envelope with the name and address of the Bidder, and the name of the project and the contract being Bid marked on the front of the envelope. Telegraph, telecopy, email, or facsimile of Bids will not be considered.

E. All sealed Bids must be submitted no later than the “Bid Opening Date and Time” as stated in the Advertisement for Bids or as changed by addendum. Any Bid not received

by the date and time set forth in the Advertisement for Bids/Addendum, will not be considered by the Owner. Bids shall be sealed in an envelope and shall bear the name and address of the Bidder and shall be endorsed “Sealed Bid” – and include the name of the project.

F. A Bidder may withdraw its Bid at any time prior to the scheduled time for opening Bids. No Bid may, however, be withdrawn for a period of sixty (60) days from the opening of the Bids. The Owner reserves the right to reject all Bids pursuant to applicable law and waive minor immaterial informalities in the Bidding process in accordance with the law. The Owner further reserves the right to reject all Bids and not award a Contract if the Owner has not obtained the requisite approval for the project or any portion thereof from the applicable state and/or local agencies. Any agreement entered into by the Owner is expressly conditioned upon the Owner obtaining the requisite approval for the Project. The Owner reserves the right to terminate the agreement if it has not obtained the requisite approval for the Project or any portion thereof from the applicable state agencies. No Bid shall be deemed accepted until the adoption of a formal resolution by the Owner. Contract to be awarded will be awarded to the lowest responsible Bidder whose Bid is responsive in all material respects to the Bid requirements.

G. Proposals shall be submitted on the documents furnished by the Architect, contained in the Project Manual, properly filled out in the manner designated and duly executed, including Affidavits. Proposal Forms shall be filled in, with ink or typewritten, in both words and figures. In case of discrepancy, the amount described in words shall govern.
   1. Proposals shall be submitted with one original, and two duplicates marked ‘COPY’ in the upper-right corner of the front page.

H. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.04 FORM OF BID BOND

A. **Every Bid must be accompanied by a Bid Guarantee** in the form of a Certified Check, Cashier’s Check, or Bid Bond (together with a Consent of Surety) drawn to the order of the “Owner” for the amount of Ten Percent (10%) of the Bid (Base Bid or Base Bid with Alternate Bid(s), whichever is greater), but not in excess of $20,000.” Bond shall be furnished by a surety company authorized to do business in the State of New Jersey. Certified or cashier's checks shall be drawn on a state or national bank rated "A" by at least two nationally recognized rating agencies. Checks shall be made payable to the Owner.

B. The Bid Guarantee shall be forfeited if Bidder fails to execute a Contract with the Owner and furnish the Owner with a satisfactory performance bond and a payment bond and the required certificates of insurance within ten (10) days after the Contract is awarded. In the event the Bidder defaults by failing to execute the Contract or to provide all guarantees, insurance and other items required, the funds represented by such Bidder's Bid guarantee shall be released to the Owner and become and remain the property of the Owner. Delivery of the Bid guarantee constitutes agreement of the Bidder and the surety and any other entity that issued the Bid, that such amount shall be released to the Owner in the event of such default.

C. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.05 CONSENT OF SURETY

A. Consent of Surety: Pursuant to N.J.S.A. 18A:18A-25, Bids shall be accompanied by a Consent of Surety assuring that satisfactory arrangements have been made between the Surety and the Bidder, by which the Surety agrees to furnish the Bidder with a Performance Bond and a Payment Bond, each in the stated amount of one hundred percent of the Contract Sum. The Consent of Surety shall be executed by an approved Surety Company authorized to do business in the State of New Jersey.

B. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.06 PERFORMANCE BOND AND PAYMENT BOND

A. The Bidder to whom a Contract has been awarded shall furnish and deliver within ten (10) days after issuance of written "Letter of Intent" or date of “Notice of Award”, a Performance Bond and a Payment Bond in the form as bound herewith. The Performance and Payment Bonds shall each be in the amount of one hundred percent (100%) of the awarded contract amount. The surety on the Performance Bond and Payment Bond shall be a surety company and having a bond rating as noted in section 006212 - Supplementary Conditions - AIA A201-2017 paragraph 11.1.4 that are both satisfactory to the Owner and authorized to do business in the State of New Jersey. The bonds shall comply with the requirements of New Jersey law, specifically, N.J.S.A. 2A:44-143 et seq., and shall be in a form consistent with the statute, and acceptable to the Owner. The Performance Bond and Payment Bond shall be maintained in full force and effect until the Owner is satisfied that all unpaid claims against the Bidder have been resolved.

B. The cost of the Bonds shall be paid for by the Contractor.

3.07 POWER OF ATTORNEY

A. Attorneys-in-fact who sign Bid Bonds, Contract Bonds, and Consent of Surety must accompany with each bond or consent of surety, a certified and effectively dated copy of their power of attorney.

B. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.08 STATEMENT OF BIDDERS QUALIFICATIONS

A. All Bidders shall complete the Statement of Bidders Qualifications and attached forms. The Owner may make such additional investigations as it deems necessary to determine the ability, competence, and financial responsibility of the Bidder to perform their work.

3.09 NON-COLLUSIVE AFFIDAVIT

A. No official or employee of the Owner who is authorized in thier official capacity to negotiate, make, accept or approve or to take part in such decision regarding a contract in connection with a school facilities project shall have any financial or other personal interest in any such contract.
   1. The Owner and its officers and employees shall comply with the School Ethics Law, N.J.S.A. 18A:12-21 et seq. and N.J.A.C. 6A:28.

B. No Bidder shall directly or indirectly enter into any agreement, participate in any collusion or otherwise take any action in restraint of free, competitive Bidding in connection with this project.

C. Affidavit of non-collusion is included as part of the Bidding documents and should be completed by the Bidder.

3.10 OWNERSHIP DISCLOSURE STATEMENT

A. No corporation, partnership, or limited liability company shall be awarded any Contract for the performance of any work or the furnishing of any materials or supplies, unless, prior to the receipt of the Bid or accompanying the Bid of said corporation, partnership, or LLC, there is submitted a statement setting forth the names and addresses of all stockholders in the corporation or partnership who own ten (10) percent or more of its stock of any class, or of all individual partners or members in the partnership who own a ten (10) percent or greater interest therein. Ownership Disclosure Statement shall be completed and attached to the Bid proposal.

B. To comply with this section, a Bidder with any direct or indirect parent entity which is publicly traded may submit the name and address of each publicly traded entity and the name and address of each person that holds a 10 percent or greater beneficial interest in the publicly traded entity as of the last annual filing with the federal Securities and Exchange Commission or the foreign equivalent, and, if there is any person that holds a 10 percent or greater beneficial interest, also shall submit links to the websites containing the last annual filings with the federal Securities and Exchange Commission or the foreign equivalent and the relevant page numbers of the filings that contain the information on each person that holds a 10 percent or greater beneficial interest.

C. The provisions of N.J.S.A. 52:25-24.2, in referring to corporations, partnerships, and LLC, are intended to apply to all business entity types, including, but not limited to, limited partnerships, limited liability company, limited liability partnerships, and Subchapter S corporations.

D. Bidders are required to disclose the business entity type. The Ownership Disclosure Statement form shall be completed, signed, and notarized.

E. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.11 CERTIFICATION OF NO MATERIAL ADVERSE CHANGE IN STATUS

A. Every prequalified Bidder must submit with its proposal the following:
   1. That there has been no material adverse change in its qualification information (Certification of No Material Adverse Change in Status) included as part of the Bidding documents.

B. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.12 DEBARMENT, DISQUALIFICATION, OR SUSPENSION

A. Per N.J.A.C 17:19-4.1 Causes for debarment of a firm(s) or an individual(s).

B. By signing and submitting the Contractor Certification in section 004540 - Bidder's Certification Regarding Debarment/Disqualification/Suspension the Contracting Firm is bound by the representations of this certification.The Certification is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the Contracting Firm knowingly rendered an erroneous Certification, in addition to other remedies available to the Owner, the Owner may pursue available remedies, including qualification, suspension, disqualification and/or debarment.

C. The Contracting Firm shall provide immediate written notice to the Owner if at any time it learns that its Certification was erroneous by reason of changed circumstances.The terms “debarment”, “disqualification”, and “suspension”, as used in this clause, have the meanings as defined in N.J.A.C. 17:19-1-1 et seq..

D. You may contact the Stafford Township Board of Education for assistance in obtaining a copy of those regulations.

E. The Contracting Firm further agrees by submitting this Certification that it will include the clause titled “Certification Regarding Qualification, Debarment, Suspension and Disqualification of person(s) concerning Contract Administration,” without modification, in all subcontracts to this agreement as authorized by the Owner.

3.13 CERTIFICATION OF FEDERAL NON-DEBARMENT

A. Per 52:32-44.1 Debarment of certain persons from contracting for public work.

B. By signing and submitting the certification in section 004545 - Certification of Federal Non-Debarment the Contracting Firm is bound by the representations of this certification.The Certification is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the Contracting Firm knowingly rendered an erroneous Certification, in addition to other remedies available to the Owner, the Owner may pursue available remedies, including qualification, suspension, disqualification and/or debarment.

3.14 CONTRACTOR EQUIPMENT CERTIFICATION

A. Every Bidder shall certify that it owns, leases, or controls all the necessary equipment required by the Specifications. If the Bidder is not the actual Owner or lessee of any such equipment, it shall submit a certificate stating the source from which the equipment will be obtained and shall obtain a certificate from the Owner and person in control of the equipment, granting to the Bidder the control of the equipment required during such time as may be necessary for the completion of that portion of the Contract for which it is necessary.

3.15 LAW AGAINST DISCRIMINATION

A. The Bidder (Contractor) that is awarded a Contract, and its Subcontractors, agrees to comply with the Anti-Discrimination provisions of N.J.S.A. 10:2-1 et seq.; the New Jersey Law Against Discrimination, N.J.S.A. 10:5-1 et seq., N.J.A.C. 17:27-1.1 et seq. set forth at length in Exhibit B attached hereto and made a part hereof and incorporated herein by reference. A complete copy of the regulations, N.J.A.C. 17:27-1 et seq., are available upon request or online.

B. In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under this contract, no Contractor, nor any person acting on behalf of such Contractor or Subcontractor, shall, by reason of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex, discriminate against any person who is qualified and available to perform the work to which the employment relates;

C. No Contractor, Subcontractor, nor any person on their behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under such contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex;

D. This contract may be cancelled or terminated by the contracting public agency, and all money due or to become due hereunder may be forfeited, for any violation of this section of the contract occurring after notice to the Contractor from the contracting public agency of any prior violation of this section of the contract.

3.16 C.271 POLITICAL CONTRIBUTION DISCLOSURE FORM

A. The Contractor is advised of the responsibility to file an Annual Disclosure Statement (Accountability Compliance Form, N.J.A.C. 6A:23A-6.3) on Political Contributions with the New Jersey Election Law Enforcement Commission pursuant to N.J.S.A. 19:44A-20.13 (P.L. 2005, c.271, s.3) if the Contractor receives contracts in excess of $50,000.00 from public entities in a calendar year. It is the Contractor’s responsibility to determine if filing is necessary. Additional information on this requirement is available from ELEC at (888) 313-3532.

B. Pursuant to N.J.A.C. 6A:23A-6.3, Bidders shall provide a list of political contributions on the attached forms c.271 with their Bids. The Board may not award a contract over $17,500.00 to a Bidder that has made a reportable contribution to a member of the district board of education during the preceding one-year period.

3.17 EQUIPMENT CERTIFICATION

A. In accordance with N.J.S.A. 18A:7G-37, a prequalified Contractor seeking to Bid school facilities projects, and any Subcontractors, required to be named under N.J.S.A. 18A:7G-1 et al. shall, as a condition of Biding, needs to submit 004580 - Sworn Contractor Certification Requirements regarding qualifications and credentials.

3.18 CONTRACTOR REGISTRATION

A. The Public Works Contractor Registration Act (N.J.S.A. 34:11-56.48, et seq.) requires all Contractors, Subcontractors, or lower tier Subcontractors who Bid on or engage in the performance of any work for which the payment of prevailing wage is required in the state of New Jersey to register with the Department of Labor and Workforce Development. The Contractor Registration Certificate is issued to both the company and its responsible representatives.

B. It is recommended that each Contractor and Sub-Contractor listed in the Bid, submit this with the Bid to show proof of registration.

3.19 BUSINESS REGISTRATION CERTIFICATE

A. Pursuant to N.J.S.A. 52:32-44, it is encouraged that all Bids be accompanied by a New Jersey Business Registration Certificate issued by the New Jersey Department of Treasury, Division of Revenue. N.J.S.A. 52:32-44 requires Contractor and all named Subcontractors listed in the Bid to submit the Business Registration Certificate prior to the award of the Contract. Failure to do so will result in the rejection of the Bid. Owner requests that Bidders submit this with their Bid.

B. No contract with a Subcontractor shall be entered into until the Subcontractor provides a copy of a valid business registration certificate to the Contractor.

C. The Contractor shall maintain and submit a current updated list of Subcontractors and their current Business Registration Certificate as a continuing obligation under this Contract. Before final payment on the Contract is made by the contracting agency, the Contractor shall submit an accurate list and the proof of business registration of each Subcontractor or supplier used in the fulfillment of the Contract or shall attest that no Subcontractors were used

D. For the term of this contract, the Contractor and each of its affiliates and each Subcontractor and supplier and each of its affiliates as defined in N.J.S.A. 52:32-44(g)(3) shall collect and remit and shall notify all Subcontractors and their affiliates that they must collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act (N.J.S.A. 54:32B-1 et seq.) on all sales of tangible personal property delivered into this State, regardless of whether the tangible personal property is intended for a contract with a contracting agency.

E. During the course of contract performance:
   1. The Contractor shall not enter into a contract with a Subcontractor unless the Subcontractor first provides the Contractor with a valid proof of business registration.
   2. The Contractor shall maintain and submit to the Contracting Agency a list of Subcontractors and their addresses that may be updated from time to time.
   3. The Contractor and any Subcontractor providing goods or performing services under the contract, and each of their affiliates, shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A. 54:32B-1 et seq.) on all sales of tangible personal property delivered into the State. Any questions in this regard can be directed to the Division of Taxation at (609)292-6400.

3.20 CERTIFICATE OF AUTHORITY

A. A seller's permit is commonly known as a sales tax permit, reseller permit, resale certificate, sales tax exemption certificate, sales tax license or sales and use tax permit. In the state of New Jersey it is formally referred to as a Certificate of Authority. This certificate will furnish a business with a unique NJ sales tax number, otherwise referred to as a NJ Tax ID number.

B. The ownership or staff of a business (including sales people, Contractors or agents) who enter New Jersey to conduct business activities are required to have a Certificate of Authority.

3.21 DPMC - NOTICE OF CLASSIFICATION

A. Per N.J.S.A. 18:18A–26. Bidders are to be classified as to the character and amount of public work on which they shall be qualified to submit Bids, and Bids shall be accepted only from persons qualified in accordance with such classification.

B. It is recommended that the Bidder and each Sub-Contractor, listed in the Bid, submit proof of classification with their Bid.

3.22 DPMC - UNCOMPLETED CONTRACTS

A. Per N.J.A.C. 17:19-2.13, the Bidder shall include with their Bid a certification that the firm's Bid for the subject contract would not cause the firm to exceed its aggregate rating limits, including consideration of its backlog of uncompleted construction work, including public and private contracts.

B. It is required that the Bidder and each Sub-Contractor, listed in the Bid, submit a copy of form DPMC 701 - Total Amount of Uncompleted Contracts, as provided by the Department of Treasury Division of Property Management and Construction (DPMC).

C. Failure to submit this document will result in immediate rejection of the Bid as Non-Responsive.

3.23 CONTRACTOR TRADE LICENSE

A. It is recommended that licensed Contractors provide proof of trade licenses for Plumbing, Electric, and HVAC, when applicable, with the Bid.

PART 4 POST-BID INFORMATION

4.01 PREVAILING WAGE RATE

A. Each Contractor and Subcontractor is required:
   1. To comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq., and pay all workmen and/or Subcontractors performing services in connection with the project not less than the prevailing rate of wages as determined by the State Department of Labor and Workforce Development, whereby said prevailing rate of wages are enumerated in the list of prevailing wage rates included as part of the Project Specifications and Contract Documents, are on file in the owner's office and/or the architect's office and are made a part hereof and incorporated herein by reference.

2. The Owner will contact the State Department of Labor and Workforce Development to verify the prevailing wage rates applicable to the Project.
3. To furnish the owner with an affidavit stating that all workmen have been paid in accordance with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq.
4. Upon request, file verified written statements with the owner certifying the amounts then due and owing to any and all workmen for wages due on account of the work and the names of the persons whose wages are unpaid and the amount due to each.
5. To submit weekly payroll forms in full compliance with the Prevailing Wage Act.
6. To keep an accurate record showing the name, craft or trade and actual hourly rate of wages paid to each workman employed by him in connection with the project. Records shall be preserved for five (5) years from the date of payment in compliance to N.J.A.C. 17:44-2.2.
7. To post the prevailing wage rates for each craft and classification involved in the work, including the effective date of any changes thereof, in prominent and easily accessible places at the site of the project and at such place or places as are used to pay workmen their wages.

B. In the event that it is found that anyone employed by the Contractor or any Subcontractor has been paid a rate of wages less than the prevailing wage required to be paid by such contract, the owner may terminate the Contractor's right to proceed with the work or such part of the work as to which there has been a failure to pay required wages and to prosecute the work to completion or otherwise. The Contractor and thier Sureties shall be liable to the Owner for any excess costs occasioned thereby.

C. Certification by Bidder:
   1. When a public body engages in competitive Bidding for public work subject to the provisions of the New Jersey Prevailing Wage Act (PWA), N.J.A.C. 34:11-56.25 et seq., the person who makes the lowest Bid for the contract by 10 percent or more under the amount of the next lowest Bid shall prior to award of the contract certify to the public body on the form found at N.J.A.C. 12:60 Appendix that the prevailing wage rates required by the PWA shall be paid in performing the work under the contract.
   2. If the Bidder does not provide the certification required pursuant to (a) above prior to the award of the contract, the public body shall award the contract to the next lowest responsible and responsive Bidder.

4.02 SALES TAX

A. The Owner is exempt under the provisions of the New Jersey Sales and Use Tax Act and are not required to pay sales tax. Bidders will be expected to comply with the provisions of the Act and rules and regulations promulgated pursuant thereto to qualify them for exemptions with reference to any and all labor, service and materials supplied to or furnished in connection with the work to be performed.

4.03 AWARD OF CONTRACTS

A. The Owner reserves the right to reject all Bids pursuant to N.J.S.A. 18A:18A-22 or to waive minor immaterial informalities in the Bidding, in accordance with applicable laws.

The Owner reserves the right to reject the Bid of any Bidder who in the judgment of the Owner, in accordance with applicable law, is not deemed responsible to perform the Contract. The Owner reserves the right, in accordance with applicable law, to reject the Bid of any Bidder with whom the Owner has had a prior negative experience.

B. The lowest responsible Bidder(s) shall be determined in accordance with statute. The Owner shall have the right to determine which alternates, if any, shall be included in the final determination. The add or deduct amount of any alternates selected by the Owner shall be included in a consistent manner in all Bid tabulations.

C. The contract shall be signed by the Contractor and returned to the Owner within ten (10) days after the making of the award, and the contract shall be signed by the Owner within twenty-one (21) days after the making of the award; provided however, that all parties to the contract may agree to extend the limit set forth in the specifications beyond the limits required.

D. The board of education shall award the contract or reject all Bids within such time as may be specified in the invitation to Bid, but in no case more than 60 days, except that the Bids of any Bidders who consent thereto may, at the request of the board of education, be held for consideration for such longer period as may be agreed. All Bid security except the security of the three apparent lowest responsible Bidders shall, if requested, be returned after 10 days from the opening of the Bids, Sundays and holidays excepted and the Bids of such Bidders shall be considered as withdrawn. Within three days after the awarding of the contract and the approval of the Contractor's performance bond the Bid security of the remaining unsuccessful Bidders shall be returned to them forthwith, Sundays and holidays excepted.

E. Upon notice of award of a construction contract, the Owner will provide the Contractor with Form AA-201, Initial Project Workforce Report. The Contractor shall after notification of award, but prior to signing a construction contract, properly complete and submit an Initial Project Workforce Report, Form AA-201. Proper completion and submission of this report shall constitute evidence of the Contractor’s compliance with the regulations of Affirmative Action. Failure to submit this form may result in the contract being terminated. The Contractor also agrees to submit a copy of the Monthly Project Workforce Report, Form AA-202 once a month thereafter for the duration of the contract to the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts and the Public Agency Compliance Officer. The Owner is required to retain the Affirmative Action evidence on file for review by the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts.

4.04 ASSIGNMENT / SUBCONTRACT

A. The Contractor may not assign this contract to any person, partnership, LLC, or corporation, nor may it subcontract any part of the work required to be performed under the contract without obtaining the prior written approval of the Owner.

B. Any assignee or successor in interest to the contract who is approved by the Owner shall be bound by the terms of this contract.

C. Any Subcontractor approved by the Owner shall be bound by the terms of this contract.

4.05 RECEIPTED BILLS FOR MATERIALS, ETC.

A. It is hereby understood and agreed that no payments after the first payment shall be made by the Owner to any Contractor for materials delivered and accepted during any month covered by this contract or any work done or labor furnished during the same period, unless and until receipts and any and all other vouchers showing payment by the Contractor for materials and labor, including payments to Subcontractor from the preceding payment to Contractor on the same basis set forth in the Certificate for Payment, having been filed with the Owner and annexed to the Certificate covering said payment applied for; anything to the contrary in any of the Contract Documents referred to herein notwithstanding.

B. It is further agreed and understood that the Contractor will require all Subcontractors within thirty (30) days after any payment is made to Subcontractors to submit sufficient proof of payment, covering both labor and material so that the Contractor is satisfied that no stop notices can be filed against him for any money due the Subcontractor or their labor or material.

4.06 RELEASE OF LIENS

A. Neither the final payment nor any part of the retained percentage shall become due until the Contractor delivers to the Owner a complete Release of all Liens arising out of this Contract and an affidavit that so far as he has knowledge or information, the releases include all labor and material for which a lien could be filed, but the Contractor may, if any Subcontractor refuses to furnish a release in full, furnish a bond satisfactory to the Owner, to indemnify him against any liens. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a lien, including all costs and reasonable attorney's fees.

4.07 PROGRESS PAYMENTS

A. The Owner reserves the right to refuse approval or reject on account of subsequently discovered evidence, the whole or part of any monthly payment to such extent as may be necessary to protect against loss on account of defective work not remedied or any form of payment claims against the Contractor that may subsequently have accrued. The Owner shall withhold the retainage as prescribed N.J.S.A. 18A:18A-40 et seq. All payments shall comply with the New Jersey Prompt Payment Act, N.J.S.A. 2A:30A-1 et seq.

4.08 FINAL ACCEPTANCE

A. The final acceptance shall not be binding or conclusive upon the Owner should it subsequently find that the Contractor has supplied inferior material or workmanship or has departed from the terms and conditions of its contract. Should such a condition appear the Owner shall have the right, notwithstanding, final acceptance and payment to cause the work to be properly done in accordance with the Drawings and Specifications at the cost and expense of the Contractor.

4.09 MAINTENANCE BOND

A. Prior to the start of the guarantee period, which starts at the date of Substantial Completion, and before final payment is made, the Bidder who is awarded a Contract shall provide the Owner with a Maintenance Bond as required in section 005620 - Form of Maintenance Bond, together with power of attorney, in the amount of the contract price to insure the replacement or repair of defective materials or workmanship.

B. The cost of the Bond shall be paid for by the Contractor.

4.10 FORM OF AGREEMENT

A. The Contract shall be comprised of the Advertisement to Bidders, Instructions to Bidders, Project Manual, Standard Form of Agreement between Owner and Contractor, AIA Document A101-2017 edition, as revised by the Owner, General Conditions of the Contract for Construction, AIA DocumentA201-2017 edition, as revised by the Owner, all supplementary and additional conditions of the Contract and any Addenda thereto. The Bidder to whom the contract is awarded shall, within ten (10) days from receipt of the Agreement between Owner and Contractor from the Owner, sign and return the contract to the Owner.

4.11 TIME FOR COMPLETION/LIQUIDATED DAMAGES

A. Since time is of the essence and actual damages suffered by the Owner are incapable of precise calculation, the Contractor agrees that the amount set forth in the supplementary conditions is a fair and reasonable method of measuring the damages suffered by the Owner for each calendar day the project is delayed.

B. In the event the project is not fully completed and the building ready for occupancy/re-occupancy on the date specified in the Contract documents, the Contractor shall pay the Owner the sum stated Section 006212 - Supplementary Conditions - AIA A201-2017, article 8.4.2 Time of Completion – Delay – Liquidated Damages as liquidated damages, not as a penalty, for each calendar day that the project is delayed. It shall also include the deduction, from the Contract price, or any wages paid by the board of education to any inspector or inspectors necessarily employed by it on the work, for any number of days in excess of the number allowed in the Specifications.

4.12 FINAL PAYMENT SCHEDULE

A. Upon the presentation of a duly executed board of education voucher (purchase order), including the submission of an application for payment certified by the Architect, all closeout documents, training sessions, and the production of the maintenance bond, manufacturer's warranty and release of lien, the contract amount shall be paid within thirty (30) days of final completion of the project, and in compliance with the New Jersey Prompt Payment Act, N.J.S.A. 2A:30A-1 et seq..

4.13 WARRANTY

A. In addition to the warranties set forth in the General Conditions contained herein, the Bidder warrants that the services to be rendered to the Owner shall be furnished in a workmanlike manner and in accordance with all applicable federal and state statutory requirements and administrative regulations.

4.14 RECORD RETENTION

A. The Contractor shall maintain all documentation related to products, transactions, or services under contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

4.15 INDEMNITY AND HOLD HARMLESS AGREEMENT

A. To the fullest extent permitted by law, the successful Contractor shall indemnify, protect, defend and save harmless the Owner, the Architect, Engineers (if any), Construction Manager (if any), their respective agents, officers, employees, and servants from any and all claims, demands, suits, damages, costs and expenses, including reasonable attorneys' fees, whether or not caused, in part by any party indemnified hereunder, arising out of, or in any way related to the Project, the performance of Contractor's agreement with the Owner that may arise out of or result from the acts or omissions of the Contractor in performing the agreement or the conditions created thereby as more particularly set forth in Article 3.18 of Section 006111 - AIA A101-2017 General Conditions of the Contract for Construction.

B. These provisions shall survive the Expiration or Termination of this Agreement.

END OF SECTION 002113

SECTION 004000 - BID DOCUMENT CHECKLIST

_____
Company Name

BID DOCUMENT CHECKLIST

The Forms, as noted below, are considered part of the Bid package and it is recommended that the Contractor submit them with its Bid Proposal. Failure to provide any item(s) noted as (*) below, at time of Bid submission, shall cause rejection of Bid Proposal in accordance with the law.

Requested y Owner	Submission Requirement	Initial Each Entry and Submit the Item
X	004000 - Bid Document Checklist	_____
X	*004100 - Form of Bid Proposal - Single Prime (including Acknowledgement of Addenda and Subcontractor Listing)	_____
X	*004320 - Form of Bid Bond (with Power of Attorney for full amount of Bid Bond), or Certified Check, Or Cashier's Check.	_____
X	*004325 - Form of Consent of Surety (with Power of Attorney for full amount of Bid Price)	_____
X	004510 - Statement of Bidder's Qualifications	_____
X	004525 - Form of Non-Collusive Affidavit	_____
X	*004530 - Ownership Disclosure Statement	_____
X	*004535 - Certifications of No Material Adverse Change in Status	_____
X	004540 - Bidder's Certification Regarding Debarment/Disqualification/Suspension	_____
X	004545 - Certification of Federal Non-Debarment (Required prior to award)	_____
X	004550 - Contractor's Equipment Certification	_____

(Continued on back)

_____
Company Name

X	004560 - Affirmative Action Language of Exhibit B and Affirmative Action Acknowledgement	_____
X	004570 - Political Contribution Disclosure Form (Required prior to award)	_____
X	*Notarized State of New Jersey Form (DPMC 701) noting total amount of uncompleted contracts.	_____

The Forms, as noted below, are considered part of the Bid package and it is recommended that the Contractor and each Sub-Contractor listed in the Bid submit them with its Bid Proposal.

Requested by Owner	Bidder and **Each Sub-Contractor Listed** should submit the following with the Bid	**Initial Each Entry and Submit the Item**
X	NOTICE OF CLASSIFICATION from DPMC as issued by The State of New Jersey, Department of Treasury, Division of Property Management and Construction (DPMC).	_____
X	Contractor or Trade License required under applicable New Jersey Law for any trade or specialty area in which the Bidder Or subcontractor(s) will perform work.	_____

The Forms, as noted below, are considered part of the Bid package and it is recommended that the Contractor and each Sub-Contractor listed in the Bid submit them with its Bid Proposal. Failure to submit them prior to award shall result in rejection of Bid.

Requested by Owner	Bidder and **Each Sub-Contractor Listed** shall submit the following prior to Bid award	**Initial Each Entry and Submit the Item**
X	Certificate by the Department of Labor indicating Compliance with “The Public Works Contractor Registration Act” (P.L. 1999, c.238) for compliance with this Act	_____
X	Business Registration Certificate issued by the Department of Treasury, Division of Revenue	_____
X	004580 - Sworn Contractor Certification Requirements	_____

END OF SECTION 004000

SECTION 004100 - FORM OF BID PROPOSAL - SINGLE PRIME

THE UNDERSIGNED: _____

(Name of Bidder)

signifies that (it) (they) (has) (have) examined the Contract Documents consisting of the Project Manual which includes Bidding and Contract Requirements, General Requirements and Technical Specifications, as well as the Contract Drawings and all Addenda and (has) (have) familiarized (itself) (themselves) with all local conditions affecting the cost of the Work and existing conditions at the Site; and assumes all responsibility for delivering the Work complete in every detail, in accordance with the Contract Documents, as prepared by Spiezle Architectural Group, Inc., 1395 Yardville Hamilton Square Road, Suite 2A, Hamilton, New Jersey 08691, for complete construction of:

HVAC Upgrades at Ocean Acres Elementary School
489 Nautilus Drive, Stafford Township, New Jersey 08050

for the

Stafford Township Board of Education
250 North Main Street, Manahawkin, New Jersey 08050

NOTE: If written amount differs from the numerical figures, only the written amount will be accepted as the correct Bid. Bidders are also required to provide cost amounts for base bid, all alternate bids and all unit prices associated with the Contract or Contracts being bid. The failure to bid an alternate by leaving the amount blank or stating "no bid" shall be considered a material defect, resulting in the rejection of the bid. If an alternate item will result in no change in the base bid, bidder shall clearly so indicate by stating either "zero" or "no change". No conditions, limitations or provision may be placed on a bid.

CONTRACT BID

BASE BID _____ Dollar

(To Be Written in Full)

$(_____)

(Figures)

ALLOWANCES: THESE AMOUNTS ARE INCLUDED IN THE BASE BID

ALLOWANCE AL-01: Lump Sum of One hundred and fifty thousand dollars ($150,000.00)

CONTRACTOR

The Bidder shall be classified by the New Jersey Department of the Treasury, Division of Property Management and Construction in one of the following trades:

C008 - General Construction, C009 – General Construction/Alterations and Additions, or C032 - HVACR

In addition, the Bidder shall be classified in, or engage a properly classified subcontractor for each trade listed below in which the Bidder is not so classified:

C032 – HVACR

C047 – Electrical

For each of the classifications indicated above, provide the following information. Do not leave any classification identification lines below blank.

C032 – HVACR:

Company Name: _____

Address: _____

_____

Contact Person: _____ Telephone: (_____) _____

C047 – Electrical:

Company Name: _____

Address: _____

_____

Contact Person: _____ Telephone: (_____) _____

By indicating a Subcontractor above, the Contractor certifies that if awarded the bid, the Subcontractors listed above will be awarded subcontracts.

Each of the subcontractors shall be qualified in accordance with N.J.S.A. 18A: 18A-26. All Subcontractors must be registered by the State of New Jersey to work on school construction projects pursuant to the Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq. , and submit a valid Business Registration Certificate pursuant to N.J.S.A. 52:32-44 prior to award.

The undersigned affirms that the sums include all charges and expenses for the furnishing of all labor and materials for the erection, construction and completing the work in all respects in the manner and under the conditions specified.

The Bidder hereby acknowledges that they have received the following Addenda which shall become part of the Contract Documents as though originally incorporated therein.

Addendum No._____Dated_____ Addendum No._____ Dated _____

Addendum No._____Dated_____ Addendum No._____ Dated _____

No Addenda Received _____

The Statement of Bidder's Personnel and Experience must accompany this proposal.

If written notice of the acceptance of this Bid is mailed, facsimiled, or delivered to the undersigned within sixty (60) days after the opening thereof, or any time before the Bid is withdrawn, pursuant to N.J.S.A 18A:18A-36, the undersigned agrees to execute and deliver a Contract within ten days after the Contract is presented to it for signature.

Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this Proposal, or any other proposal or submitting of proposals from the contract for which this proposal is submitted.

The Undersigned does further declare that no one other than herein named have any interest in this Proposal.

The Undersigned is:

An Individual	( )
A Partnership	( )
A LLC	( )
A Corporation	( )

under the laws of the State of _____ Having Principal Office in the City of _____ County of _____ and the State of _____.

The undersigned affirms that the bid includes all charges and expenses for the furnishing of all labor, work, materials, and equipment necessary or reasonably inferable from the contract documents, for the completion of the work in accordance with the contract documents. If awarded the contract, the undersigned agrees to comply with all stipulations contained in the Specifications.

The undersigned agrees that if a contract is awarded,they will execute and deliver the contract prepared on behalf of the Owner, within ten (10) days after receipt of the contract, together with the performance bond, payment bond, and insurance certificate as required in the Specifications.

The undersigned further agrees that, if awarded a contract, they will commence work within ten (10) days of receipt of a written Notice to Proceed, or Contract, as applicable. The work shall be completed in accordance with the Contract Documents on or before the date specified in the Project Manual. Failure to substantially complete the project on the date specified may entitle the Owner to liquidated damages as specified in the Supplementary Conditions.

Name of Bidder _____

By _____

Title _____

Official Address (for mail) _____

_____

_____

Official Address (for courier) _____

_____

_____

Telephone No. _____ Date _____

Fax No. _____

E-Mail Address _____

NOTE: DO NOT FAIL TO EXECUTE THIS OATH OR AFFIDAVIT:

AFFIDAVIT

STATE OF _____)

SS:

COUNTY OF _____)

_____

(Name of Bidder or Bidders, or if Bidder is a corporation, name of Officer or Agent making Affidavit.)

being duly sworn, says that the several declarations and matters stated in the annexed estimate are in all respects true.

I hereby certify that I _____ am the _____ of the bidder submitting this proposal and that I am authorized to submit this bid on behalf of the bidder and that the information contained in all bidding documents submitted by the bidder is true and accurate. I further certify that the bidder and all subcontractors listed herein have sufficient means and experience to complete the work in accordance with the project Specifications. I am aware that if any of the foregoing statements made by me are willfully false, I am subject to punishment.

Signature of:

_____

(Bidder, if Bidder is an Individual)

_____

(Partner, if Bidder is a Partnership)

_____

(Officer, if Bidder is a Corporation)

Sworn and subscribed before me this

_____ day of _____ 20 ____.

NOTARY PUBLIC _____

(Signature)

_____

(Print Name)

SEAL

Notary Public - State of _____

My Commission Expires _____

END OF SECTION 004100

SECTION 004320 - FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS, That we, the undersigned

_____as Principal, and _____

as Surety, are hereby and firmly bound unto the Stafford Township Board of Education, in the penal sum of TEN PERCENT of amount of bid, not to exceed TWENTY THOUSAND and 00/100 (10% not to exceed $20,000.00) for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors,

Signed this _____ day of _____.

The condition of the above obligation is such that whereas the Principal has submitted to the Owner as defined, a certain Bid, attached hereto, and hereby made a part hereof, to enter into a contract in writing for:

_____

NOW, THEREOF, if said Bid shall be rejected, or, in the alternative,

If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Agreement provided (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said Contract, and shall in all other respects perform the Agreement created by the acceptance of the Bid,

Then this obligation shall be void, otherwise the same shall remain in force, and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Principal may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and Surety have set their hands and seals, and such of them as are corporations having caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal: _____ (L.S.)

Surety: _____ By: _____

STATE OF)

: SS:

COUNTY OF)

On this _____ day of _____ 20 ___, before me personally came _____ to me known, who, being by me duly sworn, did dispose and say; he resides in _____ that he is the _____ of the instrument, that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

(SEAL)

_____

Notary Public of _____

My Commission expires _____

END OF SECTION 004320

SECTION 004325 - FORM OF CONSENT OF SURETY

The _____

(Name and address of surety)

_____

a corporation organized under the laws of the state of _____ and authorized to do business in New Jersey, hereby certify that application has been made to us by

_____

(Name and address of Bidder)

_____

and satisfactory arrangements have been completed by which we have and do now agree to furnish a Performance Bond equal to 100% of the contract amount to ensure the faithful performance on the part of the Bidder of the terms and conditions of the contract and a Payment Bond equal to 100% of the contract amount to ensure the payment of all persons furnishing labor and materials in accordance with the contract and the accompanying Bid dated _____, 20___ for all construction to complete

HVAC Upgrades at Ocean Acres Elementary School

489 Nautilus Drive, Stafford Township, New Jersey 08050

of the terms and conditions of the Contract and the payment of all lawful claims according to the Contract Documents prepared therefore, on which said Bid is made. This proposition is made with the understanding that any change made in the Drawings, Project Manual, Agreements or quantities without the consent of the bondsmen, shall in no way vitiate the bond.

_____

Surety Company

By _____

Attorney-in-fact

Date _____

END OF SECTION 004325

SECTION 004510 - STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered, and the data given must be clear and comprehensive.
This statement must be notarized.
Attach separate letters where requested.

Name of Bidder: _____

Permanent Main Business Address: _____

_____

Phone Numbers, Fax Numbers, Email Address: _____

_____

When Organized or Incorporated: _____

State where Incorporated: _____

Number of years engaged in the contracting business under your present firm or trading name?

_____

General character of work performed by company. _____

_____

Have you ever failed to complete any work awarded to your firm? _____

If so, where and why? _____

_____

Have you ever defaulted on a Contract? _____ If so, provide complete details, including where and why?_____

In the past three years, have there been any outstanding debts over 60 days to subcontractors or material/equipment suppliers for work in place of any of your contracts other than a maximum allowance of 10% for retainage? _____ If so, how much and why?_____

__

_____

In the past three years, have there been any liens placed on any projects attributed to your contract or have there been any attempts to have any liens placed on any project attributed to your contract? _____ If so, explain the circumstances.

_____

_____

Have all payments associated with past labor costs (workers compensation, benefits, etc.) been paid in full to the proper authorities as required by law or agreements? _____ If not, explain.

_____

_____

_____

Have you had any material adverse changes from the trades as listed in N.J. Notice of Classification within the last five (5) years? _____. If so, list previous classification.

_____

Attach schedule of current projects under construction with gross contract amount and uncompleted dollar amount of each project and anticipated completion dates. **

Attach schedule of major contracts including construction costs completed by firm within the last three (3) years. **

Background and experience of principals of the firm. **

List names of projects, architects/clients and phone numbers to contact for references for projects in progress or completed including at least three (3) years. **

Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the proper agency? _____

List Trade References: _____

_____

_____

_____

The undersigned, hereby authorizes and requests any person, firm or corporation to furnish any information requested by the proper agency in verifying information comprising this Statement of Bidder's Qualifications.

****Attach separate sheets to this Statement of Bidders Qualifications Form with Bid Proposal****

Signature of:

_____

(Bidder, if Bidder is an Individual)

_____

(Partner, if Bidder is a Partnership)

_____

(Officer, if Bidder is a Corporation)

Sworn and subscribed before me this

_____ day of _____, 20 _____.

_____

(Signature)

_____

(Print Name)

(SEAL)

Notary Public - State of _____

My Commission Expires _____

CURRENT PROJECTS UNDER CONSTRUCTION RELATING TO THE SAME TYPE OF WORK FOR WHICH THIS CONTRACT COVERS

Project Name & Address	Contact Person & Phone Number	Gross Contract	Uncompleted Dollar Amount	Anticipated Completion Date

MAJOR CONTRACTS COMPLETED WITHIN THE LAST THREE YEARS

		Construction Costs			
Project Name	**Contact Person & Phone No.**	**Original Cost**	**Change Orders**	**Final Cost**	**Completion**

BACKGROUND AND EXPERIENCE OF PRINCIPALS OF THE FIRM

LIST NAMES OF PROJECTS, ARCHITECTS/CLIENTS AND PHONE NUMBERS TO CONTACT FOR REFERENCES FOR PROJECTS IN PROGRESS OR COMPLETED INCLUDING AT LEAST THREE (3) YEARS.

Project	Architect/Client	Phone Numbers

END OF SECTION 004510

SECTION 004525 - FORM OF NON-COLLUSIVE AFFIDAVIT

AFFIDAVIT

(Prime Bidder)

State of _____)

) SS

County of_____)

_____, being first duly sworn, deposes and says: That he is

_____

(An Individual, Partner or Officer of the Firm of)

the party making the foregoing Proposal or Bid, that such Proposal or Bid is genuine and not collusive or sham; that said Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any Bidder or person to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person to fix the bid price of affiant or of any other Bidder, or to fix any overhead profit or cost element of said bid price, or that of any other Bidder, or to secure any advantage against the Stafford Township Board of Education or any person interested in the proposed Contract, and that all statements in said Proposal or Bid are true.

Signature of:

_____

(Bidder, if Bidder is an Individual)

_____

(Partner, if Bidder is a Partnership)

_____

(Officer, if Bidder is a Corporation)

Sworn and subscribed before me this

_____ day of _____, 20_____

_____

(Signature)

_____

(Print Name)

(SEAL)

Notary Public - State of _____

My Commission Expires _____

END OF SECTION 004525

SECTION 004530 - OWNERSHIP DISCLOSURE STATEMENT

STATEMENT OF OWNERSHIP

(OWNERSHIP DISCLOSURE CERTIFICATION)

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This Statement shall be included with all Bid and Proposal Submissions

Name of Business: _____

Address of Business: _____

Name of person completing this form: _____

Pursuant to N.J.S.A. 52:25-24.2:

"No corporation, partnership, or limited liability company shall be awarded any contract nor shall any agreement be entered into for the performance of any work or the furnishing of any materials or supplies, unless prior to the receipt of the bid or proposal, or accompanying the bid or proposal of said corporation, said partnership, or said limited liability company there is submitted a statement setting forth the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be.

If one or more such stockholder or partner or member is itself a corporation or partnership or limited liability company, the stockholders holding 10 percent or more of that corporation's stock, or the individual partners owning 10 percent or greater interest in that partnership, or the members owning 10 percent or greater interest in that limited liability company, as the case may be, shall also be listed. The disclosure shall be continued until names and addresses of every non-corporate stockholder, and individual partner, and member, exceeding the 10 percent ownership criteria established in this act, has been listed.

To comply with this section, a bidder with any direct or indirect parent entity which is publicly traded may submit the name and address of each publicly traded entity and the name and address of each person that holds a 10 percent or greater beneficial interest in the publicly traded entity as of the last annual filing with the federal Securities and Exchange Commission or the foreign equivalent, and, if there is any person that holds a 10 percent or greater beneficial interest, also shall submit links to the websites containing the last annual filings with the federal Securities and Exchange Commission or the foreign equivalent and the relevant page numbers of the filings that contain the information on each person that holds a 10 percent or greater beneficial interest."

This Ownership Disclosure Certification form shall be completed, signed and notarized.

Failure of the bidder/proposer to submit the required information is cause for automatic rejection of the bid or proposal.

Part I

SELECT ONE WHICH REPRESENTS THE TYPE OF BUSINESS ORGANIZATION:

_____ - Sole Proprietorship (skip Parts II and III, sign and notarize at the end)
_____ - Non-Profit Corporation (skip Parts II and III, sign and notarize at the end)
_____ - Partnership
_____ - Limited Partnership
_____ - Limited Liability Partnership
_____ - Limited Liability Company
_____ - For-profit Corporation (including Subchapters C and S or Professional Corporation)
_____ - Other (be specific): _____

Part II

_____ I certify that the list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be.

OR

_____ I certify that no one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or that no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be.

Sign and notarize the form below, and, if necessary, complete the list below.

(Please attach additional sheets if more space is needed)

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Name: _____ Name: _____

Address: _____ Address: _____

_____ _____

Part III - Any Direct or Indirect Parent Entity Which is Publicly Traded:

"To comply with this section, a bidder with any direct or indirect parent entity which is publicly traded may submit the name and address of each publicly traded entity and the name and address of each person that holds a 10 percent or greater beneficial interest in the publicly traded entity as of the last annual filing with the federal Securities and Exchange Commission or the foreign equivalent, and, if there is any person that holds a 10 percent or greater beneficial interest, also shall submit links to the websites containing the last annual filings with the federal Securities and Exchange Commission or the foreign equivalent and the relevant page numbers of the filings that contain the information on each person that holds a 10 percent or greater beneficial interest."

_____ Pages attached with name and address of each publicly traded entity as well as the name and address of each person that holds a 10 percent or greater beneficial interest.

OR

_____ Submit here the links to the Websites (URLs) containing the last annual filings with the federal Securities and Exchange Commission or the foreign equivalent.

_____

_____

AND

_____ Submit here the relevant page numbers of the filings containing the information on each person holding a 10 percent or greater beneficial interest.

_____

_____

Subscribed and sworn before me this _____ day

of _____, 20_____

(Notary Public)

My Commission expires:_____

_____
(Affiant)

_____
(Print name of affiant and title if applicable)

(Corporate Seal if a Corporation)

END OF SECTION 004530

SECTION 004535 - CERTIFICATIONS OF NO MATERIAL ADVERSE CHANGE IN STATUS

TO THE BIDDER: This AFFIDAVIT must be submitted with your Bid.

STATE OF _____)
) SS:
COUNTY OF _____)

Stafford Township Board of Education
250 North Main Street
Manahawkin, New Jersey 08050

_____ being duly sworn, according to law, deposes and say that he/she is _____ of _____ and that the answers to the following statements are true and correct and that there has been no material adverse change in the qualification information subsequent to the latest statement submitted as required under Chapter 105, Laws of 1962 (N.J.S.A. 18A:18A-27-33 et seq.) as amended, except as set forth herein:

A statement as to financial ability, adequacy of plant and equipment, organization and prior experience of the Bidder and also such other pertinent material facts as may be deemed desirable as required by N.J.S.A. 18A:18A-28 has been submitted to the Department of Treasury within the last 12 months preceding the date set for opening bids of this Contract.

I (Bidder) certify, as required by N.J.S.A. 18A:18A-32, that subsequent to the latest such statement submitted by me (Bidder), there has been no material adverse change in qualification information except as set forth herein as follows:

_____

_____

_____

_____

_____ is classified by the State of New Jersey under Chapter 105, Laws of 1962, as amended. This Classification became effective _____, _____, and will expire _____, 20 ___ .

Type of Contract/Trade Classified:

_____

_____

_____

Approved Amount $ _____.

A copy of my valid and active Pre-Qualification/Classification Certificate from the Department of Treasury, Division of Property Management and Construction is attached.

The total amount of uncompleted work on contracts is $ _____.

I hereby certify under penalty as provided by law, that there is not now pending any litigation or other action that may jeopardize my rating, status or contract limits from their current limits.

_____

(Signature)

Sworn and subscribed before me this

_____ day of _____, 20____

_____

(Signature)

_____

(Print Name)

SEAL

Notary Public - State of _____

My Commission Expires _____

END OF SECTION 004535

SECTION 004540 - BIDDER'S CERTIFICATION REGARDING DEBARMENT/DISQUALIFICATION/SUSPENSION

INSTRUCTIONS FOR CONTRACTOR CERTIFICATION REGARDING THE QUALIFICATION, DEBARMENT, SUSPENSION, AND DISQUALIFICATION OF PERSON(S) COVERING CONTRACT ADMINISTRATION

1. By signing and submitting Contractor Certification 004540-2 the Contracting Firm is bound by the representations of this certification.
2. The Certification is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the Contracting Firm knowingly rendered an erroneous Certification, in addition to other remedies available to the Owner, the Owner may pursue available remedies, including qualification, suspension, disqualification and/or debarment.
3. The Contracting Firm shall provide immediate written notice to the Owner if at any time it learns that its Certification was erroneous by reason of changed circumstances.
4. The terms “debarment”, “disqualification”, and “suspension”, as used in this clause, have the meanings as defined in N.J.A.C. 17:19-1-1 et seq.. You may contact the Stafford Township Board of Education for assistance in obtaining a copy of those regulations.
5. The Contracting Firm further agrees by submitting this Certification that it will include the clause titled “Certification Regarding Qualification, Debarment, Suspension and Disqualification of person(s) concerning Contract Administration,” without modification, in all subcontracts to this agreement as authorized by the Owner.

SECTION 004540 - BIDDER’S CERTIFICATION REGARDING DEBARMENT/DISQUALIFICATION/SUSPENSION

CERTIFICATION REGARDING THE QUALIFICATION, DEBARMENT, SUSPENSION AND DISQUALIFICATION OF PERSON(S) CONCERNING CONTRACT ADMINISTRATION

****

I am _____ (Bidder or an Officer or Partner of the Bidder, and indicate which) of the Firm of _____

(Name of Your Organization)

_____.

(State the Address of Your Organization)

CHOOSE ONE OF THE FOLLOWING

****

_____ A. I hereby certify on behalf of _____

(Name of Your Organization)

that, on the date and time of the bid, neither it nor its principals or affiliates is/are included on the State Treasurer’s List of Debarred, Suspended or Disqualified Bidders as a result of action

taken by any State or Federal Agency or debarred at the Federal level from contracting with a Federal Government agency, pursuant to N.J.S.A. 52:32-44.1. If awarded the contract, the Bidder acknowledges and agrees to insert into all its contracts with all Subcontractors and Subconsultants a clause stating that the Contracted Party, its Subcontractors or Subconsultants may be debarred, suspended or disqualified from contracting and/or working on the School Facilities Project if found to have been disbarred by any State or Federal agency, or it found to have committed any of the acts listed in N.J.A.C. 19:38A-4.1 et seq

_____ B. I am unable to clarify to any of the statements set forth in this Certification. I have attached an explanation to this form

_____

(Signature)

_____

(Typed Name and Title)

_____

(Date)

Sworn and subscribed before me this

_____ day of _____ 20_____

NOTARY PUBLIC _____

(Signature)

_____

(Print Name)

SEAL

Notary Public - State of _____

My Commission Expires _____

END OF SECTION 004540

SECTION 004545 - CERTIFICATION OF FEDERAL NON-DEBARMENT

N.J.S.A. 52:32-44.1 (P.L. 2019, c.406)

This certification shall be completed, certified to, and submitted to the contracting unit prior to contract award, except for emergency contracts where submission is required prior to payment.

PART I: VENDOR INFORMATION	
Individual or Organization Name	
Address of Individual or Organization	
Unique Entity ID (if applicable)	
CAGE / NCAGE Code (if applicable)	

Check the box that represents the type of business organization:

□ Sole Proprietorship (skip Parts III and IV) □ Non-Profit Corporation (skip Parts III and IV)

□ For-Profit Corporation (any type) □ Limited Liability Company (LLC) □ Partnership

□ Limited Partnership □ Limited Liability Partnership (LLP)

□ Other (be specific): _____

PART II – CERTIFICATION OF NON-DEBARMENT: Individual or Organization

I hereby certify that the **individual or organization listed above in Part I** is not debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the Stafford Township Board of Education is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by Stafford Township Board of Education to notify the Stafford Township Board of Education in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the Stafford Township Board of Education, permitting the Stafford Township Board of Education to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

PART III – CERTIFICATION OF NON-DEBARMENT:Individual or Entity Owning Greater than 50 Percent of Organization

Section A (Check the Box that applies)	
☐	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of its voting stock, or of the partner in the partnership who owns more than 50 percent interest therein, or of the member of the limited liability company owning more than 50 percent interest therein, as the case may be.
Name of Individual or Organization	
Address	
OR	
☐	No one stockholder in the corporation owns more than 50 percent of its voting stock, or no partner in the partnership owns more than 50 percent interest therein, or no member in the limited liability company owns more than 50 percent interest therein, as the case may be.
Section B (Skip if no Business entity is listed in Section A above)	
☐	Below is the name and address of the stockholder in the corporation who owns more than 50 percent of the voting stock of the organization's parent entity, or of the partner in the partnership who owns more than 50 percent interest in the organization's parent entity, or of the member of the limited liability company owning more than 50 percent interest in organization's parent entity, as the case may be.
Stockholder/Partner/Member Owning Greater Than 50 Percent of Parent Entity	
Address	
OR	
☐	No one stockholder in the parent entity corporation owns more than 50 percent of its voting stock, no partner in the parent entity partnership owns more than 50 percent interest therein, or no member in the parent entity limited liability company owns more than 50 percent interest therein, as the case may be.
Section C – Part III Certification	
I hereby certify that no individual or organization that is debarred by the federal government from contracting with a federal agency owns greater than 50 percent of the **Organization listed above in Part I** or, if applicable, owns greater than 50 percent of a parent entity of Organization listed above in Part I. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the Stafford Township Board of Education is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award to notify the Stafford Township Board of Education in writing of any changes to the information contained herein; that I am	

aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the Stafford Township Board of Education, permitting the to declare any contract(s) resulting from this certification void and unenforceable.			
Full Name (Print):		Title:	
Signature:		Date:	

Part IV – CERTIFICATION OF NON-DEBARMENT: Contractor – Controlled Entities	
Section A	
□	Below is the name and address of the corporation(s) in which the Organization listed in Part I owns more than 50 percent of voting stock, or of the partnership(s) in which the **Organization listed in Part I** owns more than 50 percent interest therein, or of the limited liability company or companies in which the **Organization listed above in Part I** owns more than 50 percent interest therein, as the case may be.
Name of Business Entity	**Address**
Add additional sheets if necessary	
OR	
□	The **Organization listed above in Part I** does not own greater than 50 percent of the voting stock in any corporation and does not own greater than 50 percent interest in any partnership or any limited liability company.
Section B (skip if no business entities are listed in Section A of Part IV)	
□	Below are the names and addresses of any entities in which an entity listed in Part III A owns greater than 50 percent of the voting stock (corporation) or owns greater than 50 percent interest (partnership or limited liability company).
Name of Business Entity Controlled by Entity Listed in Section A of Part IV	**Address**
****Add additional Sheets if necessary****	

OR	
☐	No entity listed in Part III A owns greater than 50 percent of the voting stock in any corporation or owns greater than 50 percent interest in any partnership or limited liability company

Section C – Part IV Certification

I hereby certify that the **Organization listed above in Part I** does not own greater than 50 percent of any entity that that is debarred by the federal government from contracting with a federal agency and, if applicable, does not own greater than 50 percent of any entity that in turns owns greater than 50 percent of any entity debarred by the federal government from contracting with a federal agency. I further acknowledge: that I am authorized to execute this certification on behalf of the above-named organization; that the Stafford Township Board of Education is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the date of contract award by Stafford Township Board of Education to notify the in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the Stafford Township Board of Education, permitting the Stafford Township Board of Education to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

END OF SECTION 004545

SECTION 004550 - CONTRACTOR'S EQUIPMENT CERTIFICATION

CERTIFICATION TO DEMONSTRATE THE CONTRACTOR'S ABILITY TO PERFORM THE WORK WITH THE NECESSARY EQUIPMENT REQUIRED

****

I am _____ (an Owner, a Partner, a Member/Manager of an LLC, or an Officer of the Company or Corporation and indicate which) of the Firm

_____

(Name of the Firm)

_____

(Address of the Firm)

CHOOSE ONE OF THE FOLLOWING

****

( ) A. I hereby certify on behalf of _____

(Name of the Firm)

that we are the actual Owner, Lessee or control all equipment necessary to perform the work of this Project.

( ) B. I hereby certify on behalf of _____

(Name of the Firm)

that we are not the actual Owner or Lessee of the equipment necessary to perform the work of this Project. The source from which the equipment will be obtained is as follows: (Provide Names, Addresses, and Telephone Numbers)

_____

_____

_____

NOTE: Should additional Names, Addresses, and Telephone Numbers be required, please list them on a separate sheet and attach to this document. Certificates from the Owner or Person in control of the equipment clearly granting our Firm the control of the equipment required for such time as may be required to perform the work of this Project are included and attached to this Certification.

_____

(Signature)

_____

(Typed Name and Title)

_____

(Date)

END OF SECTION 004550

SECTION 004560 - AFFIRMATIVE ACTION LANGUAGE OF EXHIBIT B AND AFFIRMATIVE ACTION ACKNOWLEDGEMENT

EXHIBIT B

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE
N.J.S.A. 10:5-31 et seq. (P.L.1975, c.127) N.J.A.C. 17:27-1.1 et seq.

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality, or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. l7:27-7.2; provided, however, that the Dept. of LWD, Construction EEO Monitoring Program, may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B, and C, as long as the Dept. of LWD, Construction EEO Monitoring Program is satisfied that the contractor or subcontractor is employing workers

provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, that its percentage of active “card carrying” members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(l) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and nondiscrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contactor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be

required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Dept. of LWD, Construction EEO Monitoring Program an initial project workforce report (Form AA-201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Dept. of LWD, Construction EEO Monitoring Program, and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the job programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to N.J.A.C. 17:27-1.1 et seq.

AFFIRMATIVE ACTION ACKNOWLEDGMENT

Contractor hereby certifies compliance with all requirements of P.L. 1975 c. 127 (N.J.A.C. 17:27 et seq.), Affirmative Action Regulations - Exhibit “B” and N.J.S.A. 10:5-31.

No firm may be issued a Purchase Order or Contract with the State unless they comply with the Affirmative Action Regulations.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts an initial project workforce report (Form AA201) provided to the public agency by the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Division of Contract Compliance and Equal Employment Opportunity in Public Contracts and to the public agency compliance officer.

_____
(Name of Contracting Firm, Company or Corporation)

_____
(Print Name of Highest Official)

_____
(Signature of Highest Official)

_____
(Title of Highest Official)

_____

_____
(Address of Contracting Firm, Company or Corporation)

_____
(Date)

END OF SECTION 004560

SECTION 004570 - POLITICAL CONTRIBUTION DISCLOSURE FORM

CONTRACTOR/BIDDER POLITICAL CONTRIBUTION FORM

N.J.A.C. 6A:23A-6.3 Accountability Compliance Form

Required for all non-emergency contracts over $17,500.00.

Stafford Township Board of Education
250 North Main Street
Manahawkin, New Jersey 08050

Name of Contractor/Bidder_____

Type of Entity: (check one) ____ Corporation ____ Partnership

____ Individual/Sole Proprietor ____LLC

1. The undersigned certifies that the above-named Contractor/Bidder has not made a contribution in excess of $200.00 to any member of the above named Board of Education during the past 12 months.
2. In the case of a corporation or partnership, the undersigned further certifies that no person having an interest in the corporation partnership has made such a contribution. “Interest” for purposes of this certification is defined as ownership or control of more than 10% of the profits, assets or stock of a business.
3. In the case of an individual or sole proprietor, the undersigned further certifies that neither the individual’s spouse nor child residing with the individual has made such a contribution.
4. The Contractor/Bidder understands and agrees that, if awarded the contract, it is not permitted to make any contributions to any member of the Board during the term of the contract.
5. Check on of the following:
   a. _____ Attached hereto is a true copy of the Contractor/Bidder’s list of political contributions pursuant to Section 2 of C. 271, L. 2005 (N.J.S.A. 19:44A-20.26).
   b. _____The Contractor made no political contributions during the preceding 12 months that require reporting under Section 2 of C. 271.

Signature:_____Date:_____

Print Name:_____Title:_____

C. 271 POLITICAL CONTRIBUTION DISCLOSURE FORM

Contractor Instructions, Amended for Boards of Education per 6A:23A-6.3

Pursuant to N.J.A.C. 6A:23A-6.3, business entities (contractors) receiving contracts from Boards of Education are subject to the provisions of P.L. 2005, c. 271, s.2 (N.J.S.A. 19:44A-20.26). This law provides that 10 days prior to the award of such a contract, the contractor shall disclose contributions to:

- any candidate committee of a candidate for, or holder of, an elective office, or any continuing political committee (a.k.a., political action committee)
- any candidate committee of a candidate for, or holder of, an elective office of that public entity
    - of that county in which that public entity is located
    - of another public entity within that county
    - or of a legislative district in which that public entity is located or, when the public entity is a county, of any legislative district which includes all or part of the county or any continuing political committee.

The disclosure must list reportable contributions to any of the committees that exceed $200 per election cycle that were made during the 12 months prior to award of the contract. See N.J.S.A. 19:44A-8 and 19:44A-16 for more details on reportable contributions.

It is the Contractor's responsibility to identify the specific committees to which contributions have been made and need to be disclosed. The disclosed information may exceed the minimum requirement.

N.J.S.A. 19:44A-20.26 itemizes the parties from whom contributions must be disclosed when a business entity is not a natural person. This includes the following:

- individuals with an "interest" ownership or control of more than 10% of the profits or assets of a business entity or 10% of the stock in the case of a business entity that is a corporation for profit
- all principals, partners, officers, or directors of the business entity or their spouses
- any subsidiaries directly or indirectly controlled by the business entity
- IRS Code Section 527 New Jersey based organizations, directly or indirectly controlled by the business entity and filing as continuing political committees, (PACs).

When the business entity is a natural person, "a contribution by that person's spouse or child, residing therewith, shall be deemed to be a contribution by the business entity." [N.J.S.A. 19:44A-20.26(b)] The contributor must be listed on the disclosure.

Any business entity that fails to comply with the disclosure provisions shall be subject to a fine imposed by ELEC in an amount to be determined by the Commission which may be based upon the amount that the business entity failed to report.

The enclosed form, a content-consistent facsimile, or an electronic data file containing the required details (along with a signed cover sheet) may be used as the Contractor's submission and is disclosable to the public under the Open Public Records Act.

[1.] N.J.S.A. 19:44A-3(s): "The term "legislative leadership committee" means a committee established, authorized to be established, or designated by the President of the Senate, the Minority Leader of the Senate, the Speaker of the General Assembly or the Minority Leader of the General Assembly pursuant to section 16 of P.L.1993, c.65 (C.19:44A-10.1) for the purpose of receiving contributions and making expenditures."

C. 271 POLITICAL CONTRIBUTION DISCLOSURE FORM

Required Pursuant to N.J.S.A. 19:44A-20.26 and N.J.A.C. 6A:23A-6.3(a)(4)

This form or its permitted facsimile must be submitted to the local unit no later than10 days prior to the award of the contract.

Part I – Contractor Information

Contractor Name:_____

Address:_____

City: _____ State: _____ Zip: _____

The undersigned being authorized to certify, hereby certifies that the submission provided herein represents compliance with the provisions of N.J.S.A. 19:44A-20.26 and as represented by the Instructions accompanying this form.

_____ _____ _____

Signature Printed Name Title

Part II – Contribution Disclosure

Disclosure requirement: Pursuant to N.J.S.A. 19:44A-20.26 this disclosure must include all reportable political contributions (more than $200 per election cycle) over the 12 months prior to submission to the committees of the government entities listed on the form provided by the local unit.

□ Check here if disclosure is provided in electronic form.

Contributor Name	Recipient Name	Date	Dollar Amount
			$

□ Check here if the information is continued on subsequent page(s).

(Continuation Page)

C. 271 POLITICAL CONTRIBUTION DISCLOSURE FORM

Required Pursuant to N.J.S.A. 19:44A-20.26 and N.J.A.C. 6A:23A-6.3(a)(4)

Page ___ of _____

Contractor Name:

Contributor Name	Recipient Name	Date	Dollar Amount
			$

□ Check here if the information is continued on subsequent page(s).

END OF SECTION 004570

SECTION 004580 - SWORN CONTRACTOR CERTIFICATION REQUIREMENTS

_____

(Company Name)

In accordance with N.J.S.A. 18A:7G-37, a prequalified contractor seeking to bid school facilities projects, and any subcontractors, required to be named under N.J.S.A. 18A:7G-1 et al. shall, as a condition of biding, submit this Sworn Contractor Certification regarding qualifications and credentials.

By signing and submitting this Sworn Contractor Certification the principal Owner or Officer of the Company or Corporation certifies that the firm has the following qualifications and credentials:

1. A current, valid certificate of registration issued pursuant to “The Public Works Contractor Registration Act”, P.L. 1999, c.238 (C.34:11-56.48 et seq), N.J.S.A. 34:11-56.48 et seq., a copy of which is attached hereto this certification form;
2. A current, valid “Certificate of Authority to perform work in New Jersey” issued by the Department of Treasury, a copy of which is attached hereto this certification form;
3. A current, valid contractor or trade license required under applicable New Jersey Law for any trade or specialty area in which the firm seeks to perform work, a copy of which is attached hereto this certification form;
4. During the term of construction of the school facilities project, I as principal Owner or Officer of the company or corporation, as contractor, will have in place a suitable quality control and quality insurance program and an appropriate safety and health plan.

As the principal Owner or Officer of the company or corporation, I certify that, at the time of bidding this project, the amount of the bid proposal and the value of all this firm’s outstanding incomplete contracts does not exceed the firm’s existing aggregate rating limit.

Signature: _____

Printed Name: _____

Date: _____

Company Name: _____

CORPORATE SEAL

Sworn and subscribed before me this

_____ day of _____ 20_____

_____

(Signature)

_____

(Printed Name)

SEAL

Notary Public - State of _____

My Commission Expires _____

SECTION 005611 - FORM OF PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned _____

as Principal and _____,

as Surety, are held and firmly bound unto the Stafford Township Board of Education, Manahawkin, Ocean County, New Jersey , in the penal sum of

_____ Dollars

(Written Amount)

($ _____).

(Figures)

for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns. Signed this _____ day of _____, 20____. THE CONDITION of the above obligation is such that whereas the Principal did on the _____ day of _____, 20___, enter into a contract with the Stafford Township Board of Education which said contract is made part of this bond, the same as though set forth herein:

NOW, if the said _____ shall well and faithfully do and perform the things agreed by _____ to be done performed according to the terms of said contract then this obligation shall be void, otherwise the same shall remain in effect. It being expressly understood and agreed that the liability of the surety for all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

By accepting this obligation to ensure the faithful performance of the proper fulfillment of the Contract, the Surety agrees to all cost required to furnish additional manpower, materials, facilities, equipment as may be necessary to ensure the prosecution and completion of the work in accordance with the phased substantial completion dates established in the Contract.

The Surety further agrees to reimburse and repay the Owner for all reasonable attorney’s fees, additional consequential Architectural fees incurred by the Owner resulting from the failure of faithful performance and proper fulfillment of the Contract.

The said Surety stipulates and agrees that no modifications, omissions, or additions in or to terms of said contract or in or to the plans and specifications, therefore, shall in anywise effect the obligations of said Surety on its bond.

This bond is given in compliance with the requirements of the statutes of the State of New Jersey in its respect to bonds of contractors on public works.

SIGNED, SEALED AND DATED THIS _____ DAY OF_____, 20___.

Signed by the Principal in the presence of (SEAL)

_____

(Principal)

Signed by the Surety in the presence of (SEAL)

_____

(Surety)

BY _____

(Attorney-in-fact)

SECTION 005612 - FORM OF PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, the undersigned _____,

as Principal and _____,

as Surety, are held and firmly bound unto the Stafford Township Board of Education, Manahawkin, Ocean County, New Jersey , in the penal sum of

_____ Dollars

(Written Amount)

($ _____).

(Figures)

for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

Signed this _____ day of _____, 20____. THE CONDITION of the above obligation is such that whereas the Principal did on the _____ day of _____, 20___, enter into a contract with the Stafford Township Board of Education which said contract is made part of this bond, the same as though set forth herein:

NOW, if the said _____shall well and faithfully do and perform the things agreed by _____ to be done and performed according to the terms of said contract, and shall pay all lawful claims of beneficiaries as defined by N.J.S.2A:44-143 for labor performed or materials, provisions, provender or other supplies or teams, fuels, oils, implements or machinery furnished, used or consumed in the carrying forward, performing or completing of said contract, we agreeing and assenting that this undertaking shall be for the benefit of any beneficiary as defined in N.J.S.2A:44-143 having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said Surety stipulates and agrees that no modifications, omissions or additions in or to terms of said contract or in or to the plans and Specifications, therefore, shall in anywise effect the obligations of said Surety on its bond.

Recovery of any claimant under the bond shall be subject to the conditions and provisions of this article to the same extent as if such conditions and provisions were fully incorporated in the form set forth above.

This bond is given in compliance with the requirements of the statutes of the State of New Jersey in its respect to bonds of contractors on public works.

SIGNED, SEALED AND DATED THIS _____ DAY OF_____, 20___.

Signed by the Principal In the presence of (SEAL)

_____

(Principal)

Signed by the Surety in the presence of (SEAL)

_____

(Surety)

BY _____

(Attorney-n-fact)

SECTION 005620 - FORM OF MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, That we,

_____as Principal and

_____as Surety, are held and firmly bound unto the Stafford Township Board of Education, as Owner, in the amount of ONE HUNDRED PERCENT (100%) OF THE CONTRACT SUM.

_____ Dollars

(Written Amount)

($_____)

(100% of Contract Sum)

for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas, the Principal did on _____, _____, 20____, enter into a Contract for:

HVAC Upgrades at Ocean Acres Elementary School

489 Nautilus Drive, Stafford Township, New Jersey 08050

FOR THE

Stafford Township Board of Education

250 North Main StreetManahawkin, New Jersey 08050

Manahawkin, New Jersey 08050

WHICH said Contract is made a part of this Bond as though set forth herein: NOW, if the said Principal shall remedy without cost to the Owner any defects which may develop during a period of two (2) years from the date established in the Final Certificate of Substantial Completion for the work performed under the said Contract, provided such defects, in the judgment of the Owner, are caused by defective or inferior materials or workmanship.

The said Surety hereby stipulates and agrees that no modification, deletions or additions in or to the terms of the said Contract or the Drawings or Project Manual therefore shall in any way affect its obligation on this Bond.

IN WITNESS WHEREOF, the said Principal and Surety have duly executed this bond under seal this _____ day of _____, 20____.

ATTEST:

_____
(Principal)

_____
(Principal) Secretary

(SEAL)

BY: _____ (S)

_____

_____
(Address-Zip Code)

_____
(Witness as to Principal)

_____

_____
(Address-Zip Code)

_____
(Surety)

BY: _____
(Attorney-in-fact)

_____

_____
(Address - Zip Code)

_____
(Surety) Secretary

(SEAL)

_____
(Witness as to Surety)

_____

_____
(Address-Zip Code)

SECTION 006000 - PROJECT FORMS

Project Forms included in this section are provided for the Contractor's use. Contractors shall use these forms exclusively, unless preapproved by the Architect.

Included in this Project Manual are the following:

1. Form 006010 – Request for Information (RFI)
2. Form 006020 – Job Meeting Report
3. Form 006030 – Submittal Cover Sheet
4. Form 006040 – Substitution Matrix
5. Form 006050 – Ready for Closeout

REQUEST FOR INFORMATION

RFI No: _____ CONTRACT No:_____

RFI Title:_____ Date Needed: _____

Requested by Company: _____ Date: _____

Response:

Response Prepared By: _____ Date: _____

END OF SECTION 006010

spiezle

JOB MEETING REPORT

Project:_____ Commission No:_____

Contractor:_____ Date : _____

Job Meeting Report No.: _____

Contract No./Work: _____

Work accomplished during previous period:

Work scheduled over next period:

Signed: _____ Date: _____

END OF SECTION 006020

SUBMITTAL COVER SHEET

NOTE:

The following information is required and shall accompany all project submittals.

Submittals received without this cover sheet shall be deemed incomplete and will not be reviewed.

CONTRACTOR'S SUBMITTAL NO:	
SUBMITTED ITEM(S) / TITLE:	
SPEC. SECTION / DRAWING REF.:	
SUBMITTING CONTRACTOR:	
SUBCONTRACTOR / MANUF.:	

YES	NO	
		Is submittal a substitution? If yes, provide required Substitution Matrix.

CONTRACTORS COMMENTS:

SUBMITTED AND APPROVED BY:

Signature	Company	Date

REVIEWERS COMMENTS:

END OF SECTION 006030

spiezle

SUBMITTAL MATRIX FOR SUBSTITUTION EVALUATION AS APPROVED EQUAL

The following is being submitted for evaluation of a substitution as an approved equal.

(Manufacturer's literature must be attached for verification)

Specification Data (1):	Specified Product (2):	Proposed Equal (3):

1. The 1st column shall list data derived from the specific specification section (i.e. doors, windows, etc.).
2. The 2nd column shall list data values for the product from the specific specification section (i.e. size, load capacity, material thickness, etc.)
3. The 3rd column shall list data values for the 'proposed equal' product and MUST be accompanied by the manufacturer's written product data and/or other applicable literature for the Architect to conduct a full review.

END OF SECTION 006040

READY FOR CLOSEOUT

Contractor shall submit a copy of this document with the completed punchlist, signed and sealed by the Contractor's authorized representative and notarized, to the Architect indicating that the Work has been completed as required in accordance with the Contract Documents and after which the Contractor shall notify the Architect when re-inspection is requested.

The undersigned certifies that all items of work noted herein, and all other required scope of Work have been completed in accordance with Contract Documents and is further certifying that the project is ready for final inspection by the Architect. The undersigned acknowledges providing all required close-out documents, including, but not limited to, all affidavits, warranties and a release of liens, to the Architect.

Items not completed shall be summarized by the Contractor in letter form and attached herewith.

The undersigned hereby certifies that he/she shall pay the Owner for any and all expenses incurred by theArchitect due to the Contractor's misrepresentation of completion of punch list items.

_____

Authorized Representative of the Contractor (Print/Type)

_____

Title

_____ _____

Signature Date

THE CONTRACTOR SHALL SEAL THIS PUNCHLIST AS NOTED BELOW:

_____ _____

Contractor's Corporate Seal Notary Seal

Prepared by: _____ Date: _____

END OF SECTION 006050

SECTION 006115 - STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR (CMA) - AIA A132-2019

OWNER AND CONTRACTOR (CMa)

The Contract to be used for this Project will be the 2019 Edition of AIA Document A132 - STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR, Construction Manager as Advisor Edition, with modifications set forth in Section 006117 – SUPPLEMENT TO THE FORM OF AGREEMENT included herein.

END OF SECTION 006115

DRAFT

AIA® Document A132™ – 2019

Standard Form of Agreement Between Owner and Contractor,
Construction Manager as Adviser Edition

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month, and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

« »« »
« »
« »
« »

and the Contractor:
(Name, legal status, address, and other information)

« »« »
« »
« »
« »

for the following Project:
(Name, location, and detailed description)

« »
« »
« »

The Construction Manager:
(Name, legal status, address, and other information)

« »« »
« »
« »
« »

The Architect:
(Name, legal status, address, and other information)

« »« »
« »
« »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND DATES OF SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[« »] The date of this Agreement.

[« »] A date set forth in a notice to proceed issued by the Owner.

[« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion of the Project or Portions Thereof

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the date of Substantial Completion of the Work of all of the Contractors for the Project will be:
(Insert the date of Substantial Completion of the Work of all Contractors for the Project.)

« »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of all of the Contractors for the Project are to be completed prior to Substantial Completion of the entire Work of all of the Contractors for the Project, the Contractors shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.4 When the Work of this Contract, or any Portion Thereof, is Substantially Complete

§ 3.4.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall substantially complete the entire Work of this Contract:

(Check one of the following boxes and complete the necessary information.)

[« »] Not later than « » (« ») calendar days from the date of commencement of the Work.

[« »] By the following date: « »

§ 3.4.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work of this Contract are to be substantially complete prior to when the entire Work of this Contract shall be substantially complete, the Contractor shall substantially complete such portions by the following dates:

Portion of Work	Date to be substantially complete

§ 3.4.3 If the Contractor fails to substantially complete the Work of this Contract, or portions thereof, as provided in this Section 3.4, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be one of the following:

(Check the appropriate box.)

[« »] Stipulated Sum, in accordance with Section 4.2 below

[« »] Cost of the Work plus the Contractor's Fee, in accordance with Section 4.3 below

[« »] Cost of the Work plus the Contractor's Fee with a Guaranteed Maximum Price, in accordance with Section 4.4 below

(Based on the selection above, complete Section 4.2, 4.3 or 4.4 below.)

§ 4.2 Stipulated Sum

§ 4.2.1 The Contract Sum shall be « » ($ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2.2 Alternates

§ 4.2.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.2.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.2.4 Unit prices, if any:
(Identify the item and state the unit price, and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.3 Cost of the Work Plus Contractor's Fee without a Guaranteed Maximum Price

§ 4.3.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.3.2 The Contractor's Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

« »

§ 4.3.3 The method of adjustment of the Contractor's Fee for changes in the Work:

« »

§ 4.3.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

« »

§ 4.3.5 Rental rates for Contractor-owned equipment shall not exceed « » percent (« » %) of the standard rental rate paid at the place of the Project.

§ 4.3.6 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.3.7 The Contractor shall prepare and submit to the Construction Manager, within 14 days of executing this Agreement, a written Control Estimate for the Owner's review and approval. The Control Estimate shall include the items in Section B.1 of Exhibit B, Determination of the Cost of the Work.

§ 4.4 Cost of the Work Plus Contractor's Fee with a Guaranteed Maximum Price

§ 4.4.1 The Cost of the Work is as defined in Exhibit B, Determination of the Cost of the Work.

§ 4.4.2 The Contractor's Fee:
(State a lump sum, percentage of Cost of the Work or other provision for determining the Contractor's Fee.)

« »

§ 4.4.3 The method of adjustment of the Contractor's Fee for changes in the Work:

« »

§ 4.4.4 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

« »

§ 4.4.5 Rental rates for Contractor-owned equipment shall not exceed « » percent (« » %) of the standard rental rate paid at the place of the Project.

§ 4.4.6 Unit Prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.4.7 Guaranteed Maximum Price

§ 4.4.7.1 The Contract Sum is guaranteed by the Contractor not to exceed « » ($ « »), subject to additions and deductions by Change Order as provided in the Contract Documents. This maximum sum is referred to in the Contract Documents as the Guaranteed Maximum Price. Costs which would cause the Guaranteed Maximum Price to be exceeded shall be paid by the Contractor without reimbursement by the Owner.

§ 4.4.7.2 Alternates

§ 4.4.7.2.1 Alternates, if any, included in the Guaranteed Maximum Price:

Item	Price

§ 4.4.7.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.4.7.3 Allowances, if any, included in the Guaranteed Maximum Price:
(Identify each allowance.)

Item	Price

§ 4.4.7.4 Assumptions, if any, upon which the Guaranteed Maximum Price is based:
(Identify each assumption.)

« »

§ 4.4.8 To the extent that the Contract Documents are anticipated to require further development, the Guaranteed Maximum Price includes the costs attributable to such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes, or equipment, all of which, if required, shall be incorporated by Change Order.

§ 4.4.9 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in Section 4.4.7.4. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the agreed-upon assumptions contained in Section 4.4.7.4 and the revised Contract Documents.

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any, to be assessed in accordance with Section 3.4.)

« »

§ 4.6 Other:
(Insert provisions for bonus, cost savings or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Construction Manager by the Contractor, and Certificates for Payment issued by the Construction Manager and Architect, the Owner shall make progress payments on account of the Contract Sum, to the Contractor, as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Construction Manager not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Construction Manager after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Construction Manager receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Progress Payments Where the Contract Sum is Based on a Stipulated Sum

§ 5.1.4.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.2 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.4.3 In accordance with AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.4.3.1 The amount of each progress payment shall first include:

- **.1** That portion of the Contract Sum properly allocable to completed Work;
- **.2** That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- **.3** That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.4.3.2 The amount of each progress payment shall then be reduced by:

- **.1** The aggregate of any amounts previously paid by the Owner;
- **.2** The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;
- **.3** Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- **.4** For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019; and
- **.5** Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5 Progress Payments Where the Contract Sum is Based on the Cost of the Work without a Guaranteed Maximum Price

§ 5.1.5.1 With each Application for Payment, the Contractor shall submit the cost control information required in Exhibit B, Determination of the Cost of the Work, along with payrolls, petty cash accounts, receipted invoices, or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor, plus payrolls for the period covered by the present Application for Payment, less that portion of the payments attributable to the Contractor's Fee.

§ 5.1.5.2 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

§ 5.1.5.3 In accordance with AIA Document A232-2019 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.5.3.1 The amount of each progress payment shall first include:

.1 The Cost of the Work as described in Exhibit B, Determination of the Cost of the Work;

.2 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and

.3 The Contractor's Fee computed upon the Cost of the Work described in the preceding Section 5.1.5.3.1.1 at the rate stated in Section 4.3.2; or if the Contractor's Fee is stated as a fixed sum in Section 4.3.2 an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work included in Section 5.1.5.3.1.1 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 5.1.5.3.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019;

.5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.5.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.5.4 The Owner, Construction Manager and Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.5.5 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor, and such action shall not be deemed to be a representation that (1) the Construction Manager and Architect have made a detailed examination, audit or arithmetic verification of the documentation submitted in accordance with Article 5 or other supporting data; (2) that the Construction Manager and Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager and Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 5.1.5.6 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.1.5.7 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.6 Progress Payments Where the Contract Sum is Based on the Cost of the Work with a Guaranteed Maximum Price

§ 5.1.6.1 With each Application for Payment, the Contractor shall submit payrolls, petty cash accounts, receipted invoices or invoices with check vouchers attached, and any other evidence required by the Owner, Construction Manager or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.

§ 5.1.6.2 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Guaranteed Maximum Price among: (1) the various portions of the Work; (2) any contingency for costs that are included in the Guaranteed Maximum Price but not otherwise allocated to another line item or included in a Change Order; and (3) the Contractor's Fee.

§ 5.1.6.2.1 The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Construction Manager and Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.6.2.2 The allocation of the Guaranteed Maximum Price under this Section 5.1.6.2 shall not constitute a separate guaranteed maximum price for the Cost of the Work of each individual line item in the schedule of values.

§ 5.1.6.2.3 When the Contractor allocates costs from a contingency to another line item in the schedule of values, the Contractor shall submit supporting documentation to the Architect and Construction Manager.

§ 5.1.6.3 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment. The percentage of completion shall be the lesser of (1) the percentage of that portion of the Work which has actually been completed; or (2) the percentage obtained by dividing (a) the expense that has actually been incurred by the Contractor on account of that portion of the Work and for which the Contractor has made payment or intends to make payment prior to the next Application for Payment by (b) the share of the Guaranteed Maximum Price allocated to that portion of the Work in the schedule of values.

§ 5.1.6.4 In accordance with AIA Document A232-2019, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.4.1 The amount of each progress payment shall first include:

- **.1** That portion of the Guaranteed Maximum Price properly allocable to completed Work as determined by multiplying the percentage of completion of each portion of the Work by the share of the Guaranteed Maximum Price allocated to that portion of the Work in the most recent schedule of values;
- **.2** That portion of the Guaranteed Maximum Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction or, if approved in writing in advance by the Owner, suitably stored off the site at a location agreed upon in writing;
- **.3** That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and
- **.4** The Contractor's Fee, computed upon the Cost of the Work described in the preceding Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 at the rate stated in Section 4.4.2 or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum fee as the Cost of the Work included in Sections 5.1.6.4.1.1 and 5.1.6.4.1.2 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 5.1.6.4.2 The amount of each progress payment shall then be reduced by:

- **.1** The aggregate of any amounts previously paid by the Owner;
- **.2** The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A232–2019;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A232–2019;

.5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 5.1.6.1 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner's auditors in such documentation; and

.6 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.6.5 The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 5.1.6.6 In taking action on the Contractor's Applications for Payment, the Construction Manager and Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor and such action shall not be deemed to be a representation that (1) the Construction Manager or Architect have made a detailed examination, audit, or arithmetic verification of the documentation submitted in accordance with Section 5.1.6.1 or other supporting data; (2) that the Construction Manager or Architect have made exhaustive or continuous on-site inspections; or (3) that the Construction Manager or Architect have made examinations to ascertain how or for what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 5.1.6.7 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.1.6.8 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A232-2019.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to when the Work of this Contract is substantially complete, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« »

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to when the entire Work of this Contract is substantially complete, including modifications for completion of portions of the Work as provided in Section 3.4.2, insert provisions for such modifications.)

« »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, when the Work of this Contract is substantially complete, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted when the Work of this Contract is substantially complete shall not include retainage as follows:
(Insert any other conditions for release of retainage when the Work of this Contract is substantially complete, or upon Substantial Completion of the Work of all Contractors on the Project or portions thereof.)

« »

§ 5.2 Final Payment

§ 5.2.1 Final Payment Where the Contract Sum is Based on a Stipulated Sum

§ 5.2.1.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect.

§ 5.2.1.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

« »

§ 5.2.2 Final Payment Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 5.2.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A232–2019, and to satisfy other requirements, if any, which extend beyond final payment;

.2 the Contractor has submitted a final accounting for the Cost of the Work, pursuant to Exhibit B, Determination of the Cost of the Work and a final Application for Payment; and

.3 a final Certificate for Payment or Project Certificate for Payment has been issued by the Architect in accordance with Exhibit B, Determination of the Cost of the Work.

§ 5.2.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the final Certificate for Payment or Project Certificate for Payment, or as follows:

« »

§ 5.3 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located. *(Insert rate of interest agreed upon, if any.)*

« » % « »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A232–2019, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »
« »
« »
« »

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A232–2019, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Article 15 of AIA Document A232–2019.

[« »] Litigation in a court of competent jurisdiction.

[« »] Other: *(Specify)*

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 Where the Contract Sum is a Stipulated Sum

§ 7.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.1.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

« »

§ 7.1.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019.

§ 7.2 Where the Contract Sum is Based on the Cost of the Work with or without a Guaranteed Maximum Price

§ 7.2.1 Termination

§ 7.2.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A232–2019.

§ 7.2.1.2 Termination by the Owner for Cause

§ 7.2.1.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232–2019, the Owner shall then only pay the Contractor an amount as follows:

.1 Take the Cost of the Work incurred by the Contractor to the date of termination;

.2 Add the Contractor's Fee, computed upon the Cost of the Work to the date of termination at the rate stated in Section 4.3.2 or 4.4.2, as applicable, or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;

.3 Subtract the aggregate of previous payments made by the Owner; and

.4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A232–2019.

§ 7.2.1.2.2 When the Contract Sum is based on the Cost of the Work with a Guaranteed Maximum Price, if the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A232-2019, the amount, if any, to be paid to the Contractor under Article 14 of AIA Document A232-2019 shall not cause the Guaranteed Maximum Price to be exceeded, nor shall it exceed the amount calculated in Section 7.2.1.2.1.

§ 7.2.1.2.3 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 7.2.1.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 7, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders. All Subcontracts, purchase orders and rental agreements entered into by the Contractor will contain provisions allowing for assignment to the Owner as described above.

§ 7.2.1.3 Termination by the Owner for Convenience

If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A232–2019, then the Owner shall pay the Contractor a termination fee as follows:

(Insert the amount of or method for determining the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

« »

§ 7.3 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A232–2019; in such case, the Contract Sum and Contract Time shall be increased as provided in Article 14 of AIA Document A232–2019, except that the term "profit" shall be understood to mean the Contractor's Fee as described in Section 4.3.2 or 4.4.2, as applicable, of this Agreement.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A232–2019 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:

(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.3 The Contractor's representative:

(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A132™–2019, Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A232–2019, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Relationship of the Parties

Where the Contract is based on the Cost of the Work plus the Contractor's Fee, with or without a Guaranteed Maximum Price, the Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

§ 8.8 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition

.2 AIA Document A132™–2019, Exhibit A, Insurance and Bonds Exhibit

.3 AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document A132™–2019, Exhibit B, Determination of the Cost of the Work

[« »] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated as indicated below:
(Insert the date of the E235-2019 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A232–2019 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

This Agreement is entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
« »« »	« »« »
(Printed name and title)	*(Printed name and title)*

SECTION 006117 - SUPPLEMENT TO THE FORM OF AGREEMENT (CMA) - AIA A132-2019

STANDARD AIA FORM

Work will be subject to provisions set forth by the American Institute of Architect's Standard AIA Document A132 "STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR", Construction Manager as Adviser Edition, Articles 1 thru 9 inclusive, which are hereby made a part of this Contract.

MODIFICATION OF AIA FORM A132

The following supplements modify, delete from, and/or add to AIA Form A132 “Standard Form of Agreement Between Owner and Contractor”, Construction Manager as Adviser Edition, as indicated by the following articles, paragraphs, etc. as noted below:

Articles, or portions thereof, that are not specifically modified, deleted, or superseded hereby, remain in full effect.

The Form of Agreement also may be supplemented elsewhere in the Contract Documents by provisions located in, but not necessarily limited to, the Project Manual.

ARTICLE 1 – THE CONTRACT DOCUMENTS

Insert after the word “Specifications,” “Advertisement to Bids, Instructions to Bidders,”

ARTICLE 5 – PROGRESS PAYMENTS

5.1.3 Delete the text of 5.1.3 and replace with the following:

“Payments shall be processed in accordance with the Prompt Payment Act, N.J.S.A. 2A:30A-1 et seq.”

5.1.7.2 Following the text: “Reduction or limitation of retainage, if any, shall be as follows:"

Insert “None.”

5.3 Delete the text of 5.3 and substitute the following:

Payments due and unpaid under the Contract shall in no instance bear interest, except as required by law pursuant to N.J.S.A. 2A:30A-2(c).

ARTICLE 6 – DISPUTE RESOLUTION

6.2 Binding Dispute Resolution: Check Litigation in a court of competent jurisdiction.

ARTICLE 8 – MISCELLANEOUS PROVISIONS

8.8 Following the text: “Other Provisions:” insert the following:

8.8.1 Affirmative Action:

The Contractor shall comply with the New Jersey Law Against Discrimination, N.J.S.A. 10:5-1, et seq., and all provisions regarding equal employment opportunity, N.J.S.A. 10:5-31, et seq. and N.J.A.C. 17:27-1.1. The Owner and the Contractor guaranty to afford equal opportunity in the performance of this Contract in accordance with an affirmative action program approved by the State Treasurer. The Contractor shall also comply with the anti-discrimination provisions of N.J.S.A. 10:2-1, et seq. set forth in the modified AIA Document A232-2009.

8.8.2 To perform the services provided for herein, the Contractor and its prime subcontractors shall be appropriately classified by the New Jersey Department of Treasury, Division of Property, Management and Construction. The failure to obtain or maintain such classification(s) shall result in the immediate termination of this Agreement.

8.8.3 The Contractor represents that, to the best of its knowledge, information and belief,

none of its employees is engaged in conduct that constitutes a conflict of interest under, or a violation of, the School Ethics Act, N.J.S.A. 18A:12-21, et seq., and N.J.A.C. 6A:28-1.1, et seq.

8.8.4 N.J.S.A. 52:32-44 imposes the following requirements on the Contractor and all subcontractors that knowingly provide goods or perform services for the Contractor under this Agreement:

8.8.4.1 No contract with a subcontractor shall be entered into until the subcontractor provides a copy of a valid Business Registration Certificate to the Contractor. The Contractor shall provide copies of its current Business Registration Certificate for each subcontractor immediately upon entering into each subcontract. The requirement of proof of business registration extends down through all levels (tiers) of the project.

8.8.4.2 The Contractor shall maintain and submit a current, updated list of subcontractors and their current Business Registration Certificate as a continuing obligation under this Contract. Before final payment on the Contract is made by the contracting agency, the Contractor shall submit an accurate list and the proof of business registration of each subcontractor or supplier used in the fulfillment of the Contract or shall attest that no subcontractors were used.

8.8.5 For the term of the Agreement, the Contractor, any subcontractor and each of their affiliates, so designated pursuant to N.J.S.A. 52:32-44(g)(3), shall collect and remit to the New Jersey Director of the Division of Taxation in the Department of Treasury, the use tax due pursuant to the Sales and Use Tax Act, N.J.S.A. 52:32B-1, et seq., on all of their sales of tangible personal property delivered into the State of New Jersey, regardless of whether the tangible personal property is intended for a contract with a contracting agency.

8.8.6 The Contractor and Subcontractor, as applicable, shall comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq. The Owner shall not hire any Contractor or Subcontractor to perform any work for the Owner who is listed or is on record in the Office of the Commissioner of the New Jersey Department of Labor and Workforce Development, as having failed to pay prevailing wages in accordance with the New Jersey Prevailing Wage Act. The Contractor must be registered with the New Jersey Department of Labor and Workforce Development in accordance with N.J.S.A. 34:11-56.48 et seq. In the event the Contractor or a subcontractor is not registered, the Board reserves the right to terminate this contract and cause the work to be completed by another contractor.

8.8.7 Where in the course of the Work, the Contractor believes that conflicts exist between the Drawings and Specifications, the Architect will interpret the intent thereof. It is expressly stipulated that neither the Drawings nor the Specification shall take precedence over the other.

8.8.8 This Agreement and the General Conditions of the Contract as modified or supplemented (modified AIA Document A132-2009, per the contract documents, as may be applicable), shall control in the case of conflict between these documents and the Project Specifications or any other exhibits incorporated by reference into this Agreement in Article 9 herein.

8.8.9 Waiver –No action or failure to act by the Owner shall constitute a waiver of any right it may have under the terms of this Contract.

8.8.10 The Contractor is subject to the warranty provisions at Sections 3.5.1, 3.5.2, 3.5.3 and 3.5.4, as well as the indemnification provisions at Section 3.19 of the modified AIA document A232-2009 for this Project or as otherwise set forth in the Contract Documents, and said provisions are incorporated into this Agreement and made a part hereof as if fully set forth at length herein.

8.8.11 The Contractor must be registered with the New Jersey Department of Labor and Workforce Development in accordance with N.J.S.A. 34:11-56.48 et seq. In the event the Contractor or a subcontractor is not registered, the Board reserves the right to terminate this contract and cause the work to be completed by another contractor.

8.8.12 Pursuant to N.J.A.C. 17:44-2.2, the Contractor shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

8.8.13 The Contractor, its Sub-consultants or Subcontractors, may be debarred, suspended or disqualified from contracting and working on a School Facilities Project if found to have committed any of the acts listed in N.J.A.C. 17:19-4.1 and N.J.A.C. 19:38A-4.1. The Contractor shall cause all subcontractors and subconsultants to insert into their contracts with all parties, a clause stating that the contract party, its subconsultants or subcontractors may be debarred, suspended or disqualified from contracting and working on a School Facilities Project if found to have committed any of the acts listed in N.J.A.C. 17:19-4.1 and N.J.A.C. 19:38A-4.1.

It is the obligation of the Contractor to provide a full and complete copy of all insurance policies held by it, at the Contractor's sole expense, upon reasonable request by the Owner, in the amounts specified in the Bid Documents and accompanying AIA Document A232-2019 General Conditions Form. The Contractor's failure to obtain or maintain adequate insurance coverage shall result in the immediate termination of this Agreement. The Board shall be named as an additional insured on all insurance policies required under this Agreement.

END OF SECTION 006117

SECTION 006233 - GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION - AIA A232-2019

The General Conditions for the Contract for Construction to be used for this Project will be the 2019 Edition of AIA Document A232 – GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION included herein, together with modifications set forth in Section 006235– SUPPLEMENTARY CONDITIONS included herein.

END OF SECTION 006233

DRAFT

AIA® Document A232™ – 2019

General Conditions of the Contract for Construction,
Construction Manager as Adviser Edition

for the following PROJECT:
(Name, and location or address)

« »
« »

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

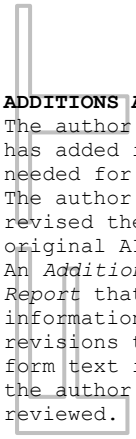
« »« »
« »

THE OWNER:
(Name, legal status, and address)

« »« »
« »

THE ARCHITECT:
(Name, legal status, and address)

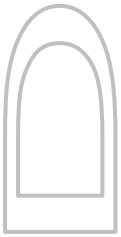
« »« »
« »



ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.



ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than the Contractor or Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

§ 1.1.7 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.8 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.10 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building

Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.6 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent

for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require

additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed

in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with

information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Construction Manager and Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager, and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is

attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Construction Manager, Architect, and Contractor. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.20 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract

Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with them.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, and other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste

materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and Certificate for Payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information,

and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment or, in the case of more than one Contractor, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor or other Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- **.7** repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the

Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final

Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the

Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- **.1** employees on the Work and other persons who may be affected thereby;
- **.2** the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor;
- **.3** other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and
- **.4** construction or operations by the Owner, Separate Contractors, or other Contractors.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing

the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager and Construction Manager's consultants, and the Architect and Architect's consultants, shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds

from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager,

Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the

other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

.3 Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be

initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise,

or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to

file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

SECTION 006235 - SUPPLEMENTARY CONDITIONS - AIA A232-2019

PART 1 GENERAL

SUMMARY

These Supplementary Conditions amend and supplement the General Conditions defined in Document 007200 - General Conditions and other provisions of Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

RELATED SECTIONS

Section 005000 - Contracting Forms and Supplements.

Section 014216 - Definitions.

REFERENCE STANDARDS

1. AIA A503-2007 - Guide for Supplementary Conditions; 2007.
2. AIA A503 - Guide for Supplementary Conditions, including Amendments to AIA Documents A201, the 2017 Owner-Contractor Agreements, and the 2019 Owner-Construction Manager as Constructor Agreements; 2019.
3. AIA A511 - Guide for Supplementary Conditions.; 1999.
4. EJCDC C-800 - Guide to the Preparation of Supplementary Conditions; 2018.

MODIFICATIONS TO GENERAL CONDITIONS

STANDARD AIA FORM:

Work will be subject to provisions set forth by the American Institute of Architect's Standard AIA Document A232-2019 "General Conditions of the Contract for Construction, Construction Manager as Advisor Edition", Articles 1 thru 15 inclusive, which are hereby made a part of this Specification.

MODIFICATION OF AIA FORM A232

The provisions of this Section modify, supplement, and/or add the following articles, paragraphs, etc. as noted below:

ARTICLE 1 – GENERAL PROVISIONS

1.1 BASIC DEFINITIONS add the following:

1.1.1 Delete the text of the paragraph and substitute the following:

The Contract Documents are enumerated in the agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary, and other conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for minor change in the Work issued by the Architect. The Contract Documents include the advertisement or invitation to bid, Instruction to bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposal or the Contractor’s bid or proposal and Addenda relating to bidding or proposal requirements.

1.1.2.1 Assignment of the Work: Neither this Agreement nor any part thereof shall be assigned by a Contractor to any person, firm, or corporation, without prior written approval of the Owner to such assignment. This provision shall not preclude the Contractor from subletting parts of the work to Subcontractors in accordance with general practices of the trade.

1.1.2.2 The Contractor acknowledges and warrants that it has closely examined all of the Contract Documents, that they are suitable and sufficient to enable the Contractor to complete the Work in a timely manner for the Contract Sum, and that they include all Work, whether or not shown or described, which reasonably may be inferred to be required or useful for the completion of the Work in full compliance with all applicable codes, laws, ordinances and regulations.

1.1.3.1 The Contractor is strongly encouraged to visit the site of the Project before submitting a bid. Such site visit shall be for the purpose of familiarizing the Contractor with the conditions as they exist and the character of the operations to be carried on under the Contract Documents, including all existing site conditions, access to the site, physical characteristics of the site and surrounding areas.

1.1.7.1 No extra compensation will be allowed due to discrepancies between actual dimensions and those indicated.

1.1.7.2 The right is reserved by the Architect to make any reasonable change in location and dimensions of equipment, fixtures, and fittings prior to roughing in without involving additional expense to the Owner.

1.1.7.3 Contractor shall coordinate his/her Work within the Work of others, so that interference between mechanical, electrical and other work and the architectural and structural work does not occur.

1.1.7.4 Contractor shall furnish and install supports, hangers, offsets, bends, turns, and the like in connection with this Work to avoid interference with work of other Contractors, to conceal Work where required, and to secure necessary clearance and access for operation and maintenance without involving additional expense to the Owner.

1.1.10.1 The term “Architect” shall include the Architect, its consultants and subconsultants, and the owners, principals, and employees of each of them.

1.1.11 THE PROJECT MANUAL. The Project Manual is a volume assembled for the Work which includes the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS add the following:

1.2.1.2 In the event of any conflict among or within the Drawings, Specifications, or Schedules, the provisions specifying a better quality or greater quantity of work or materials or comply with more stringent requirements shall take precedence and shall be the provision used in estimating bids and performing the contract, unless otherwise directed in writing by the Architect. The Architect shall determine which of the conflicting items represents the work of better quality or greater quantity or more stringent requirements. Information not shown on the Drawings but included in the Specifications, and vice versa, is included and required in the base bid Contract and shall be furnished and installed by the Contractor at no additional cost.

1.2.1.3 During the course of the Work, should any ambiguities or discrepancies be found in the Drawings, Specifications, or Schedules to which the Contractor has failed to call attention before submitting its bid, then the Architect will interpret the intent of

the Drawings, Specifications or Schedules and the Contractor hereby agrees to abide by the Architect's interpretation and to carry out the work in accordance with the decision of the Architect.

1.2.1.4 It is expressly stipulated that in cases of ambiguity or discrepancy between the Drawings and Specifications, the Architect shall have the authority to interpret or construe both documents to ensure the outcome aligns with the needs and requirements of the work. In such instances, the Contractor shall comply with the interpretation provided by the Architect, ensuring that the highest quality and quantity of work is delivered.

1.2.2.1 The various materials and products specified in the Specifications by name or description are given to establish a standard of quality and of cost for bid purposes. It is not the intent to limit the acceptance to any one material or product specified, but rather to name or describe it as the absolute minimum standard that is desired and acceptable.

1.2.2.1.1 A material or product of lesser quality will not be acceptable.

1.2.2.1.2 Where "Basis of Design" products or manufacturer's names are used, whether or not followed by the words "Or Approved Equal", they shall be subject to approved equals and authorized only by the Architect and/or the Owner.

1.2.2.2 Substitutions lowering performance, quality, method of assembly or installation, or in general not in keeping with details and specifications, will not be permitted. Refer to substitution procedure indicated elsewhere in the Contract Documents.

1.2.2.3 It is understood when a bid for any product or material is submitted, the bidder is aware of specified requirements and all materials or products within his/her bid are equal or better than such specified items.

1.2.2.4 In addition to the Specifications, it shall be understood that details shown on the Drawings shall be considered part of the Specification in determining the required "Standard of Quality".

1.2.2.5 If a conflict occurs between the Drawing details and Specifications, the bidder during the bidding process and/or Contractor shall bring such conflicts to the attention of the Architect in accordance with applicable requirements indicated elsewhere in other sections of the Contract Documents.

1.2.4 On all work of a remodeling nature or installation within the present buildings, it will be the responsibility of the Contractor, by personal inspection, to satisfy himself as to the correctness of any information given which may affect the quantity, size, and quality of materials required for a satisfactorily completed Contract, whether or not such information is indicated on the Drawings or within the Specifications.

1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE add the following

1.5.2.1 Execution of the Contract by the Contractor is a representation that said Contract Documents are full and complete, are sufficient to have enabled the Contractor to determine the cost of the Work therein, and to enter into the Contract. The Contract Documents are also sufficient to enable the Contractor to construct the Work outlined therein and to fulfill all its obligations hereunder, including, but not limited to, the obligation to construct the Work for an amount not in excess of the Contract Sum on or before the date(s) of Substantial Completion established in the Agreement. The Contractor further acknowledges and declares that it has visited and examined the site, examined all physical, legal, and other conditions affecting the Work

and is fully familiar with all of the conditions thereon and thereunder affecting the same. In connection therewith, the Contractor specifically represents and warrants to Owner that it has, by careful examination, satisfied itself as to: (1) the nature, location and character of the Project and the site, including, without limitation, the surface and subsurface conditions of the site and all structures and obstructions thereon and thereunder, both natural and man-made, and all surface and subsurface water conditions of the site and the surrounding area; (2) the nature, location, and character of the general area in which the Project is located, including without limitation, its climatic conditions, available labor supply and labor costs, and available equipment supply and equipment costs; and (3) the quality and quantity of all materials, supplies, tools, equipment, labor, and professional services necessary to complete the Work in the manner and within the cost and time frame required by the Contract Documents. In connection with the foregoing, and having carefully examined all Contract Documents, as aforesaid, and having visited the site, the contractor acknowledges and declares that it has no knowledge of any discrepancies, omissions, ambiguities, or conflicts in said Contract Documents.

1.5.3 Any differences between the requirements of the Drawings and the Specifications or any differences noted within the Drawings themselves or within the Specifications themselves, shall be referred to the Owner and Architect by the Contractor prior to the submission of bids and shall be clarified by an Addendum issued to all bidders.

If any differences or conflicts were not called to the Owner's and Architect's attention prior to submission of bids, the Architect shall d which conflicting requirements will apply, choosing the most stringent as the governing standard. Subject to the Owner's approval, the Contractor shall perform the work according to the Architect's decision at no additional cost and/or time to the Owner. Additionally, any work not explicitly covered in the Contract Documents will not be required unless it is consistent therewith and is reasonable inferable therefrom as being necessary to achieve the intended results.

1.5.3.1 The term "reasonably inferable" includes work necessary to "provide" work indicated or specified, as defined in section: Definitions and Standards; that is: furnish and install, complete, in place and ready for use.

1.5.3.2 Details referenced to portions of the Work shall apply to other like portions of the Work not otherwise detailed.

1.5.3.3 The Contractor shall request, from the Architect/Engineer's interpretation of apparent discrepancies, conflicts, or omissions in the Specifications and Drawings. Subcontractors shall forward such requests through the Contractor. Such requests, and the Architect/Engineer's interpretation, shall be in written form; other forms of communications shall be used to expedite resolution of concerns, but will not be binding.

1.5.4 Explanatory notes shall take precedence over conflicting drawn note indications. Large scale drawings shall take precedence over small scale drawings. Figured dimensions shall take precedence over scaled measurements. Should contradictions be found, the Architect shall determine which indication is correct

1.5.5 When multiple materials, brands, or processes are specified for a particular item of work, the Contractor has may select the option they consider most suitable. However, the Contractor must notify both the Architect and the Owner of their

choice before proceeding.. Approval by Architect or Owner of any materials, suppliers, or processes does not waive any contract requirements. The Contractor remains fully responsible for ensuring that all selected options meet the contract's standards, including the warranty obligations. The Owner retains the right to reject any choices that do not conform to the contract requirements or that may adversely affect the project.

1.5.6 In all cases, the Contractor must verify that the details, drawings, and specifications align with existing conditions and with the work in place. Any discrepancies or variations, if any, must be reported to the Architect for adjustment. The Contractor remains responsible for ensuring that the work fits correctly and is properly integrated with the existing conditions.

1.5.7 When a profile, section or other finished condition is shown, furring or other method of obtaining such finished conditions shall be provided. The drawings may show work full drawn out or only a portion thereof, the remainder being in outline. The drawn out portions apply to other like or similar places

1.5.8 When the specifications require that materials, products, processes, equipment, or the like be installed or applied in accordance with manufacturer's instructions, directions, or specifications, this means that said the application or installation shall be in strict accordance with printed instructions or material for conditions similar to those at the job site. The Contractor must provide three copies of such instructions to the Architect and obtain written approval from the Architect before commencing work.

1.5.9 Any materials specified by reference to the number, symbol, or title of a Commercial Standard, Federal Specification, ASTM Specification, trade association standard, or other similar standards, shall comply with the requirements in the latest revision thereof and any amendments or supplements in effect readapt the time of the bid opening. This requirement is applicable unless otherwise limited to type, class, or grade, or modified in such reference. The standards referenced, except as modified in the specifications, shall have the full force and effect as though printed in the specifications. The Architect will provide information on how to obtain copies of the referenced standards upon request.

1.5.10 If a requirement for work is duplicated in the Contract Documents or if there is a dispute regarding responsible for the work, the Architect's decision shall be final. In the event of duplication of responsibility, the Owner may seek a credit from the Contractor who is relieved from performing the redundant work

1.6 NOTICE add the following

1.6.3. Any reference to days in the Contract Documents shall be construed as calendar days.

1.7 DIGITAL DATA USE AND TRANSMISSION add the following:

1.7 Delete the text of the paragraph and substitute the following:

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form.

1.7.1 The Architect may, with the concurrence of the Owner, furnish to the Contractors versions of Instruments of Service in electronic form. The Contract Documents executed or identified in accordance with Subparagraph 1.2.1 shall prevail in case of an inconsistency with subsequent versions made through manipulatable electronic operations involving computers.

1.7.2 The Contractor shall not transfer or reuse Instruments of Service in electronic or machine-readable form without the prior written consent of the Architect.

ARTICLE 2 - OWNER

2.1 GENERAL add the following:

2.1.1 Delete the text of the paragraph and substitute the following:

The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have the following authority as delegated by the Owner. The term "Owner" means the Owner or the Owner's authorized representative:

2.1.1.2 Owner is to mean Stafford Township Board of Education.

2.1.1.3 Architect is to mean Spiezle Architectural Group, Inc.

2.1.1.4 Owner's designated Construction Manager is to mean New Road Construction Management Company Inc..

2.1.1.4.1 The Owner designates the Construction Manager to act on the Owner's behalf to administer the work of this Project. The appointment of the Construction Manager does not relieve the Contractor of any of its obligations to the Owner under the Contract Documents including, but not limited to, the coordination and project administration requirements stated in the Contract Documents.

2.1.1.5 The Owner's Representative shall have the same access to the Work provided to the Architect. He shall be consulted by the Contractor's Superintendent on all matters pertaining to the Work and shall transmit all instructions of the Architect regarding the Work to the Contractor's Superintendent.

2.1.1.6 The Owner's Representative may, in addition to inspection by others required elsewhere in the Contract Documents, inspect all Work under this Contract. While he will assist the Contractor's Superintendent in obtaining additional information in explanation of the Contract Documents and will serve as liaison between the Contractor's Superintendent and the Architect, he is not empowered to authorize deviations from the Contract nor to enter into the Contractor's area of responsibility for supervision and construction means, methods, techniques, sequences, procedures or coordination or for safety of persons and property. The fact that he may have not identified faulty Work or Work not in accordance with the Contract Documents to be performed shall not relieve the Contractor from any responsibility to perform fully in accordance with the Contract.

2.1.2 Delete the text of the paragraph and substitute the following:

Prohibited Interests: No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract or any subcontract in connection with the construction of the Project shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the Project, shall be directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

2.2 EVIDENCE OF THE OWNER'S FINANCIAL ARANGEMENTS:

Delete this section in its entirety.

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER:

2.3.1 Delete the last sentence in the paragraph.

2.3.3.1 The Owner designates the Construction Manager to act on the Owner's behalf to administer the work of this Project. The appointment of the Construction Manager does not relieve the Contractor of any of its obligations to the Owner under the Contract Documents including, but not limited to, the coordination and project administration requirements stated in the Contract Documents.

2.3.4 Delete the text of paragraph 2.3.4 and substitute the following:

If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

2.3.5 Delete the text of paragraph 2.3.5 and substitute the following:

If necessary and requested by the Architect, Tthe Owner shall furnish surveys describing physical characteristics, easements, right of ways, and utility locations for the site of the Project, and a legal description of the site. However, Tthe furnishing of these surveys and the legal description of the site shall not relieve the Contractor from its duties under the Contract Documents. Neither Owner nor the Architect shall be required to furnish Contractor with any information concerning subsurface characteristics or conditions of the areas where the Work is to be performed. WhenIf the Owner or Architect has made investigations of subsurface characteristics or conditions of the areas where the Work is to be performed, such investigations, if any, were made solely for the purposes of Owner's study and Architect's design purposes. Neither such investigations nor the records thereof are a part of the Contract Documents between Owner and Contractor. To the extent such investigations or the records thereof are made available to Contractor by the Owner or Architect, such information is provided only for the Contractor's convenience. Neither Owner nor Architect assumes any responsibility whatsoever in respect of the sufficiency or accuracy of the investigations thus made, the records thereof, or of the interpretations set forth therein or made by the Owner or Architect in its use thereof, and there is no warranty or guaranty, either express or implied, that the conditions indicated by such investigations or records thereof are representative of those existing throughout the areas where the Work is to be performed, or any part thereof, or that unforeseen developments may not occur, or that materials other than or in proportions different from those indicated may not be encountered. The Contractor shall undertake such further investigations and studies as may be necessary or useful to determine subsurface characteristics and conditions. In connection with the foregoing, the Contractor shall be solely responsible for locating (and shall locate prior to performing any Work) all utility lines, telephone company lines and cables, sewer lines, water pipes, gas lines, electrical lines, including, without limitation, all buried pipelines and buried telephone cables and shall perform the Work in such a manner so as to avoid damaging any such lines, cables, pipes, and pipelines.

2.3.6 Delete the text of paragraph 2.3.6 and substitute the following:

If necessary and requested by the Architect, Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness after receipt from the Contractor of a written request for such information or services.

2.3.7 Delete the text of paragraph 2.3.7 and substitute the following:

Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor electronic documents for the purpose of making reproductions pursuant to Section 1.5.2

2.3.8 Delete the text of the paragraph and substitute the following:

The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

2.4 OWNER'S RIGHT TO STOP THE WORK

2.4 Delete the text of the paragraph and substitute the following:

If, in the belief of the Owner, Construction Manager or Architects, the Contractor fails to correct alleged defective Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or fails to carry out Work in accordance with the Contract Documents, or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials, or equipment so as to be able to complete the Work within the Contract Time or fails to remove and discharge (within ten days) any lien filed upon Owner's property by anyone claiming by, though, or under Contractor, or disregards the instructions of Architect or Owner when based on the requirements of the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3., and the Contractor shall have no claim for damage by reason thereof.

2.5 OWNER'S RIGHT TO CARRY OUT THE WORK

Delete the text of paragraph 2.5 and substitute the following:

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents (including any approved extensions to the schedule) and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have available, and without issuing a second notice, correct such deficiencies made good by others, and may deduct the cost thereof and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's and Construction Manager's additional services made necessary by such default, neglect, or failure. Notwithstanding the foregoing, if the deficiencies result in an emergency that threatens the safety of persons or property, the Owner may take immediate action to correct the issues without prior notice to the Contractor, and the costs associated with such emergency actions shall also be deducted from payments due to the Contractor. (The Owner's right to carry out Work without prior notice in emergency situations shall not relieve the Contractor of its obligations and responsibilities under the Contract Documents. Furthermore, this right does not impose any duty on the Owner to exercise

it for the benefit of the Contractor or any other person or entity.). If current and future payments are not sufficient to cover such amounts, the Contractor and/or their surety shall pay the difference to the Owner. In such a case, an appropriate Change Order shall be issued to deduct from any payments currently or subsequently due to the Contractor the full and reasonable costs incurred by the Owner in correcting such deficiencies. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

2.5.1 Such default or neglect by the Contractor shall include, but is not limited to, failure to carry out the Work in accordance with the Contract Documents or project schedule, inadequately staffing the project with proper management, supervision, materials, and workforce, or failing to proceed expeditiously with sufficient forces to achieve Substantial Completion within the Contract Time.

2.6 INSPECTION, CONDEMNATION, AND REJECTION OF WORK AND MATERIALS

(new section)

2.6.1 Pursuant to N.J.S.A. 18A:18A-44, the Owner reserves the right to inspect all goods and services provided or performed on the Project and condemn any goods or services which in its sole judgment do not conform to the Specifications of the contract, therefore.

2.7 CONSTRUCTION MANAGER (new section)

The Owner has hired NEW ROAD Construction Management to provide full-time on-site (day shift only) Project Management services. NEW ROAD Construction Management will be the Owner’s Representative for this Project. NEW ROAD Construction Management and the Architect will share administration duties, which will be delineated at the Pre-construction Conference. NEW ROAD will essentially be the main point of contact, deferring to the Contractors for means and methods and to the Architect for final clarifications and determinations of design issues, and aesthetics. NEW ROAD, along with the Architect will manage the following processes: shop drawings, change orders, payments, correspondence, RFI’s, construction schedules, documentation, job meetings, quality assurance, punch lists, etc. NEW ROAD will facilitate coordination among the trades and the Owner, and will resolve disputes relative to the General Contractor's responsibility to coordinate the work.

A summary of the administrative, management and related services provided by NEW ROAD Construction Management are as follows and will be further defined at the first Job Meeting.

The point of contact representing the owner in all aspects of the project.

Attend and participate in construction and coordination meetings.

Monitor progress, cost, and quality of the work.

Monitor and implement procedures to facilitate coordination.

Review, negotiate, and recommend change orders.

Review and approve pay applications with the Architect.

Monitor the processing of shop drawings and submittals.

Expedite the processing of RFI’s.

Review and accept project schedules.

Maintain cost records for the owner.

Quality Assurance

Handle Project Closeout

ARTICLE 3 - CONTRACTOR

3.1 GENERAL add the following:

3.1.1.1 The Term “Contractor” shall mean the respective Prime Contract person or entity identified as such in the Owner Contractor Agreement, for each respective Prime Construction Contract, as responsible for the supervisory control over allocation, coordination of all Subcontractors or trades, performance and completion of all portions of the Work, including cooperation with those doing portions of the Work under Separate Contract with the Owner.

3.1.1.2 The Term “Contractor” shall also mean and apply with equal force to each respective Prime Contractor and all other Contractors having a direct Contract with the Owner, or with each respective Contractor or other Prime Contractor for other branches of the Work, or his authorized representative.

3.1.2 Delete the text of the paragraph and substitute the following:

The Contractor shall perform the Work in accordance with the Contract Documents. Where term "Contractor" is modified in any way, such as, without limit, "this Contractor", "General Construction Contractor", "Mechanical Contractor", "Plumbing Contractor", "Electrical Contractor", "separate contractor", the modified term shall be deemed to refer to the specific trade involved with the Work mentioned. However, , but such meaning this does not relieve the Contractor from his responsibility for all Work, whether or not such Work is sublet.

3.1.3 Delete the text of the paragraph and substitute the following:

The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect or Construction Manager in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor. Observation of Work by the Architect, Construction Manager or Owner or by employees of the Architect shall not be interpreted as relieving Contractor from his responsibility for coordination of all Work, his Superintendence of the Work, and his scheduling of the Work. The Contractor remains fully accountable for ensuring that all aspects of the Work are managed effectively and integrated seamlessly, regardless of any subcontracting or delegation of tasks.

3.1.4 The Contractor shall comply with and be subject to the mandatory provisions of N.J.S.A. 10:2-1 et seq. antidiscrimination provisions.

3.1.5 The Contractor, its Subconsultants, or Subcontrators may be debarred, suspended or disqualified from contracting and/or working on the School Facilities Project if found to have committed any of the acts listed in N.J.A.C. 38A-4.1 et seq.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

add the following:

3.2.1 Delete the text of the paragraph and substitute the following:

Execution of the Contract by the Contractor is a representation that (1) the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed, has submitted any discrepancy to the Architect prior thereto and correlated personal observations with requirements of the Contract Documents; (2) prior to the

execution of the Agreement, the Contractor and each subcontractor evaluated and satisfied themselves as to the conditions and limitations under which the Work is to be performed, including without limitation, (i) the location, condition, layout, and nature of the Project site and surrounding areas, (ii) generally prevailing climatic conditions, (iii) anticipated labor supply and costs, (iv) availability and cost of materials, tools and equipment, and (v) other similar issues. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site, or any improvements located on the Project site. Except as set forth in Paragraph 10.3, the Contractor shall be solely responsible for providing a safe place for the performance of the work. The Owner shall not be required to make any adjustments in either the Contract Sum or the Contract Time in connection with any failure by the Contractor or any subcontractor to have complied with the requirements of this subparagraph 3.2.1.

3.2.2 Delete the text of the paragraph and substitute the following:

Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. Dimensions given at full-size or large-scale details shall take precedence over smaller scaled measurements. These obligations are for the purpose of facilitating coordination and construction by the Contractor, as well as for discovering errors, omissions, and inconsistencies in the Contract Documents; as such, discrepancies shall be referred to the Architect in writing for adjustments before any work affected thereby has been performed.

3.2.2.1 Where compliance with two or more industry standards or sets of requirements is indicated within Contract Documents and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement (which is generally recognized to be the most costly) is intended and will be enforced. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Architect/Engineer in writing for a decision before proceeding. These may be shown on any plan, partial plan, in the Project Manual or in any Addenda.

3.2.2.2 The general character of the detail work is indicated on Drawings and in Specifications. The term “similar” shall be used on the Drawings in its general sense and not as meaning identical, and all details shall be worked out in relation to their location and their connection to other parts of the work. Where on any Drawings a portion of the work is drawn out and the remainder is indicated in outline, the parts drawn out shall apply also to other like portions of the work. When a detail is indicated by starting only, such detail shall be continued throughout the courses or parts in which it occurs and shall also apply to all other similar parts in the work unless otherwise indicated. In case of differences between small- and large-scale Drawings, the larger scale Drawings shall take precedence. Any discrepancies shall be referred to the Architect for adjustment before any work affected thereby has been performed.

3.2.2.3 Since the Contractor, as Bidder, was afforded the opportunity to visit the Project Site, Contractor shall be held responsible for cognizance and knowledge of existing features and conditions ascertainable by such site visit, and costs of the Work associated therewith.

3.2.2.4 The Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. If any errors, inconsistencies, or omissions appear in the Drawings, Specifications, or other Contract Documents, which should reasonably have been discovered and concerning which interpretation had not been obtained during the Bidding or Proposal Period, the Contractor shall within ten (10) days after receiving written "Notice to Proceed" notify the Architect in writing of such error, inconsistency, or omission. In the event the Contractor fails to give such notice, he will be responsible for the results of any such errors, inconsistencies or omissions and the cost of rectifying same. At the end of the ten (10) day period, Interpretations of this procedure shall be made by the Architect and its decision will be final.

3.2.4 Delete the text of the paragraph and substitute the following:

If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, including a failure to recognize or should have reasonably recognized any error, inconsistency, omission, or difference in the Contract Documents, then the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies, or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities. The Contractor shall be liable to the Owner and/or Architect for any and all damage resulting from any error, inconsistency, omission or difference which he knew or reasonably should have known but failed to report to the Architect. If the Contractor performs any work when he knows or should have known that it involves any error, inconsistency, omission, or difference, without notice to the Architect and the Owner, the Contractor shall assume full responsibility for such work and shall bear an appropriate amount of the attributable costs for correction.

3.2.5 The Contractor shall forward to the Architect a written request for supplementary Drawings and data needed by it to carry on its work. Such request shall be timed so as to enable the Architect to properly act well in advance of need at the site.

3.3 SUPERVISION AND CONSTRUCTION PROCEDURES add the following:

3.3.1.1 At the preconstruction meeting, Contractors shall identify those individuals who shall supervise and direct the Work including both office and field supervisors. The on-site supervisor shall be present at all times that the Contractor's forces are present to perform work, shall attend all progress meetings, shall attend all coordination and scheduling meetings and such other meetings as may be reasonably requested and scheduled by the Architect. Upon the Architect's request, where there is a concern as to the progress of quality of the Contractor's work, the Contractor shall cause the President or other similarly authorized representative of the Contractor with the power to make decisions of financial consequence to the Contractor, to attend meetings scheduled by the Architect.

3.3.1.2 The attendance at all meetings set forth above by a qualified representative of the Contractor is mandatory. Contractor will be assessed any costs incurred by the Owner as a result of Contractor's failure to attend a meeting. Such cost will be deducted from the Contractor's account through the issuance of a Change Order.

3.3.2.1 All personnel or agents of the Contractor shall observe all rules and regulations in effect at the Owner's premises. Employees, agents and Subcontractors of the Contractor, while on the Owner's property, shall be subject to the control of the Owner, but under no circumstances shall such persons be deemed to be employees or agents of the Owner. The Contractor's personnel are required on a daily basis to report and sign in, at a location to be determined by the Owner, each time they report for service and sign out when leaving the premises. Nothing herein shall limit the Contractor's duty to provide onsite safety and to secure the site.

3.3.2.2 Contractor's personnel and agents are not to engage in any activities with the building occupants, Owner's personnel or agents of the Owner unless duly authorized to do so in a prior writing by the Owner's authorized representative. All contractor's personnel and agents are required to wear identification badges identifying the individual and the firm for which they are employed. The Contractor shall assume full responsibility for the actions of all personnel and agents in its employ. The Contractor shall maintain proper supervision of the work in progress at all times.

3.3.2.3 Per the Department of Education Memorandum Dated September 9, 2019. Contractor is required to provide background checks with fingerprinting performed within the last six (6) months on all personnel who will be working on site on the project, for Owner's review and acceptance. The Contractor is responsible to pay all costs associated with this process. Background and Fingerprint checks can be provided through Sagem Morpho, Inc. (877) 503-5981, or other agency acceptable to the Owner. The Contractor shall not assign any employee to work at this project site who has a record or conviction for any offenses of the first or second degree, and those enumerated in N.J.S.A. 18A:6-7.1.

3.3.2.4 All personnel and agents used by the Contractor for the performance of its work shall be properly trained and qualified for the type of work being performed and shall have the minimum ability and experience for its classification. The Owner reserves the right to reasonably refuse to accept services from any personnel. The Contractor shall provide evidence of qualifications for any personnel performing work under its contract upon request.

3.3.2.5 The Owner (and/or the Owner's Representatives) reserves the right to direct the removal from the site of any person, equipment and or entity which displays inappropriate behavior, including but not limited to, smoking, alcohol consumption, drugs, fighting, intimidating behavior, vandalism, theft, improper storage, improper or illegal acts, unfit persons etc.

3.3.2.6 Owner has the sole right to modify any and all security requirements at the Project Site.

3.3.4 The Contractor shall be responsible for the supervision of Work, including expediting and coordination of the work of various trades. This responsibility includes, but is not limited to, supervising and procuring necessary materials to maintain the Work schedules of Subcontractors and the overall progress schedule of the project The Contractor must ensure the timely delivery of materials, provide and coordinate the required equipment or instruments for specified tests, checks, and system balancing,

and furnish comprehensive operating instructions. The Contractor's duties include taking all necessary steps to ensure full and timely completion of the Work in accordance with the Contract Documents.

3.3.4.1 The Contractor shall be solely responsible for laying out their own work and for all lines, elevations, and measurements of the building and other work executed under the Contract. The Contractor must carefully verify the dimensions and figures shown on the Drawings before commencing work. Any errors resulting from the Contractor's failure to exercise this precaution shall be the Contractor’s responsibility. The Contractor shall bear the costs of correcting any mistakes attributable to their failure to verify the information provided.

3.3.4.2 Contractors who fail to perform their work or who are negligent in performing their work, resulting in a negative impact on the work of other Contractors, shall be responsible for any damages incurred by those other Contractors. This responsibility includes covering costs necessary to maintain the project schedules. The Contractor’s obligations in this regard are further detailed in the Contract Documents, including, but not limited to, Section 6.2.5 of the General Condition.

3.3.5 When field inspections for quality assurance purposes by agencies employed by the Owner or Construction Manager are required, the Contractor must notify the Construction Manager's field representative a minimum of two (2) working days, in advance of the date on which the inspection is needed. The Contractor, his employees or his Subcontractors shall not install any product or equipment in a manner which is in direct conflict with the manufacturer’s recommended requirements. If the manufacturer of the product or equipment has requirements which cannot be met by the specific application indicated, the Contractor shall promptly bring this information tothe attention of the Architect. Products or equipment installed contrary to their manufacturer’s requirements shall be replaced at no additional cost to the Owner unless specifically authorized in writing by the Architect. Written authorization must be obtained prior to proceeding with any deviation from the manufacturer’s requirements and must clearly document the reasons for the exception.

3.3.6 When complex mechanical and electrical installations are involved, the Contractor’s representatives shall be sufficiently familiar with these trades to provide intelligent and efficient supervision through all phases of Work.

3.3.7 The General Contractor is designated as the Project Coordinator for this Project. The Project Coordinator and other Contractors are responsible for coordination of the Work. The Project Coordinator is responsible for making all coordination issues and disputes not mutually agreed to by all affected Contractors. This includes disputes between or among the Project Coordinator and one or more other Contractors, as well as disputes related to the construction schedule, the furnishing of additional resources to meet the project schedule, job coordination and all aspects of the means and methods of construction. These shall be submitted promptly to the Project Coordinator for a final construction decision. The Project Coordinator and the affected Contractor or Contractors shall in connection with all submissions for a final construction decision provide actual written notice contemporaneously to the Architect within 24 hours of such decisions. The final construction decision of the Project Coordinator must, at all times, be consistent with content and intent of the Contract Documents and the latest accepted schedule. The final construction decision of the Project Coordinator will be observed, accepted and fully followed by all Contractors and their Subcontractors on the project, subject only to commencement of litigation proceedings between Project Coordinator and separate

Contractor(s). The progress of the Work in accordance with the final construction decision of the Project Coordinator shall not be delayed pending any such litigation proceedings. The Contractors, including Project Coordinator, shall have no right of action against the Owner, Construction Manager or Architect in connection with such suits, and shall not join Owner, Construction Manager or Architect in any such suits. To the extent necessary to effectuate the terms and conditions of this subparagraph, the separate contractors are granted third party beneficiary status to this Contract between Owner and Contractor. In the event of a conflict between the Project Coordinator's final decision and the Architect's recommendations or decisions, the matter shall be promptly referred to the Architect for review. The Architect's decision will take precedence if it aligns with the Contract Documents and schedule. All Contractors must comply with the Architect's final decision, and disputes will be handled according to the contract's dispute resolution procedures.

3.3.8 The Contractor, when requested, shall meet with representative of the Architect and/ or Construction Manager and furnish all information requested. The Contractor ; he shall also allow the Architect and Construction Manager to inspect the work at all times. Neither the Owner, Construction Manager , nor the Architect shall be liable to the Contractor for extra compensation or damages for interference or delays on account of any such meetings, requests for information, or inspections so requested or other acts of the Architect or Construction Manager done in good faith and within the scope of their employment by the Owner. In the event that there are any delays caused to any other Contractors on this project, the Contractor(s) responsible for causing the delays shall be liable for any resulting damages, and such liability shall not extend to the Owner or Construction Managerliability shall lie with the Contractor(s) that caused the delay and not with the Owner or Construction Manager.

3.3.9 The Contractor has the responsibility to ensure that all material suppliers and Subcontractors, their agents, and employees adhere to the Contract Documents, and that they order materials on time, taking into account the current market and delivery conditions and that they provide materials on time. The Contractor shall coordinate its Work with that of all others on the Project including deliveries, storage, installations, and construction utilities. The Contractor shall be responsible for the space requirements, locations, and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations and routing cannot be made as indicated, the Contractor shall meet with all others involved, before installation, to plan the most effective and coordinated installation to meet the needs of the Owner and the Project.

3.3.10 The Contractor shall establish and maintain bench marks and all other grades, lines, and levels necessary for the Work, report errors or inconsistencies to the Architect before commencing Work, and review the placement of the building(s) and permanent facilities on the site with the Owner, Construction Manager and Architect after all lines are staked out and before foundation Work is started. Contractor shall provide access to the Work for the Owner, Construction Manager the Architect, other persons designated by Owner, and governmental inspectors. Any encroachments made by Contractor or its Subcontractor (of any tier) on adjacent properties due to construction as revealed by an improvement survey after commencing work, except for encroachments arising from errors or omissions not reasonably discoverable by Contractor in the Contract Documents, shall be the sole responsibility of the Contractor, and Contractor shall correct such encroachments within thirty (30) days of the improvement survey (or as soon thereafter as reasonably possible), at Contractor's

sole cost and expense, either by the removal of the encroachment (and subsequent reconstruction on the Project site) or agreement with the adjacent property owner(s)(in form and substance satisfactory to Owner in its sole discretion) allowing the encroachments to remain.

3.3.11 COORDINATION:

3.3.11.1 THE GC SHALL BE RESPONSIBLE TO COORDINATE ALL WORK. In the case of a single Prime Contract, the General Contractor is the sole responsible party for the coordination of the entire project, and all other prime contractors shall mean subcontractors. All trades and contractors have a mutual obligation to coordinate their work with the other trades and to cooperate as necessary with the GC, CONSTRUCTION MANAGER, and the Construction schedule – to complete the work as required by the Owner. CONSTRUCTION MANAGER will coordinate the contractors' activities with those of the Owner. Regularly scheduled job meetings shall be held at a location and time convenient for the Owner's representatives. The Contractor shall attend these meetings or be represented by an authorized person who can make binding decisions on behalf of the Contractor.

3.3.11.2 The General Contractor shall be fully responsible for coordinating and expediting the entire construction process and all of its parts. The Owner relies on the organization, management, skill, cooperation and efficiency to supervise, direct, control and manage the work to ensure it conforms to the Contract and is completed within the scheduled time. The Construction Manager will assist the GC in coordinating their work with that of the Owner and will strive to facilitate effective coordination and cooperation. Additionally, the Construction Manager will assist in resolution of any coordination issues that arise.

3.3.11.3 The General Contractor shall provide a qualified, full-time staff Project Manager to oversee their own work and the work of their sub-contractors. This Project Manager, who must be approved by the Owner, Architect, and Construction Manager, shall coordinate, organize and manage the project from the contractor's main office, including overseeing the shop drawing process and ensuring quality assurance and conformance with the Contract Documents on each shop drawing. The Owner, Architect, and Construction Manager retain the right to require the replacement of the Project Manager if performance is deemed unsatisfactory. NO work shall take place on-site by subcontractors unless a qualified Project Manager is present to oversee it.The project manager shall conduct an onsite meeting at least once a week with the construction superintendent and all subcontractors in attendance to coordinate the project and review the schedule.

3.3.11.4 The Contractor shall provide a qualified full-time Construction Superintendentto manage their own work and the work of their sub-contractors. This Construction Superintendent shall coordinate, organize and oversee all activities from the contractor's on-site field office, ensuring effective management of both their own work and the work of their sub-contractors. If the Contractor is responsible for multiple projects at different sites or multiple locations at a single large site, the Contractor shall provide a separate qualified Superintendent for each project or location. This requirement shall be determined by and subject to the approval of the Owner, Architect, and Construction Manager, who may require additional manpower as deemed necessary. This determination shall be made by and subject to the approval of the Owner, Architect and Construction Manager who at all times may require additional manpower. The construction superintendent shall be responsible for onsite safety, quality assurance, conformance with the Contract Documents and perform

coordination with all on site construction personnel and/or subcontractors. The construction superintendent shall be subject to the approval of the Owner, Architect and Construction Manager who at all times have the right to require the Contractor to replace this construction superintendent if they fail to perform.

3.3.11.5 The Contractor shall coordinate his activities with the activities of other contractors to ensure seamless integration of all work and avoid conflicts or delays.

3.3.11.6 All questions pertaining to the work are to be made to the A/E (via an RFI Form) sufficiently in advance of construction to permit comparisons, investigation or references to drawings and shop drawings as necessary.

3.3.11.7 The General Contractor is required to submit a site logistics plan coordinating all Owner functions with the access and safety of the job site. This plan must address all aspects of site utilization to ensure smooth operations.

3.3.11.8 The Contractor is required to coordinate all the inspection and material testing to meet the contract documents specifications. The construction manager will endeavor to assist in coordination between the contractor and Owner's 3rd party Special Inspector, but the contractor may be held liable for costs incurred for delayed inspections, cancelled inspection or repeat inspections.

3.3.11.9 The Contractor has full and sole responsibility for construction methods and implementation of a "quality control system" to insure coordination.

3.3.11.10 The Contractor is responsible for field verification of all dimensions/measurements for the coordination of materials and trades. This includes checking dimensions, clearances, relationships to available space, and anchoring requirements.

3.3.11.11 The Contractor shall make all necessary arrangements to conduct work so that all parts shall be carried on harmoniously and simultaneously or sequentially, so as components or increments of the same shall not interfere or retard the progress of others.

3.3.11.12 Minor changes in locations of equipment, parts, etc. due to field conditions shall be made, if so directed, at no additional cost to the Owner.

3.3.11.13 The Contractor shall coordinate the delivery, unloading, movement, relocation, storage and protection of all materials, ensuring that materials are managed effectively throughout the project.

3.3.11.14 The Contractor shall examine the drawings and dimensions and is responsible for satisfactory joining and fitting of all parts of the work. Proper alignment and integration of components are required.

3.3.11.15 Accurate dimensions, sleeved and opening drawings are to be submitted prior to placement in the field.

3.3.11.16 The Contractor shall work in close cooperation with the HVAC, Electrical, Plumbing, Fire Protection, and any other relevant sub-contractors to prepare comprehensive coordination drawings for all above ceiling areas throughout the entire project. These drawings must accurately depict all piping, ductwork, cable trays, electrical duct banks, and similar items. They must be coordinated with the complete architectural, mechanical, and electrical reflected ceiling layouts. The Contractor is responsible for ensuring that these drawings are complete and accurate, with any conflicts or discrepancies resolved prior to installation. This coordination is essential to avoid delays and additional costs, and any issues arising from incomplete or incorrect

drawings shall be rectified at no additional cost to the Owner. Coordination drawings are required to be complete prior to installation of any MEP rough-ins.

3.3.11.17 Where space is limited, the Contractor must coordinate arrangement of mechanical, electrical, and other work to fit. The Contractor must provide detailed plans and cross-section dimensions of space available, including structural obstructions and ceilings as applicable.

3.3.11.18 The Contractor shall be responsible for preserving the integrity of ceiling heights and room sizes and is required to check compatibility with all equipment, other work, electrical characteristics, and operational control requirements.

3.3.11.19 The Contractor shall obtain and distribute installation data on each item of equipment requiring mechanical or electrical connections to each relevant subcontractor. The Contractor shall ensure motor voltages and control characteristics, controls, interlocks, wiring of pneumatic switches and relays, wiring and control wiring diagrams are coordinated with all relevant sub-contractors and review the effect of any changes to other work.

3.3.11.20 The Contractor shall coordinate and observe start-up and demonstration of equipment and systems, observe and maintain record of tests and inspections, ensure proper documentation of maintenance records and assist the Architect and Construction Manager with final inspections.

3.3.11.21 The Contractor shall inform the Owner via the Construction Manager when coordination of the Owner’s work is required. Coordinate all mechanical, plumbing, electrical, food service and equipment/furnishings work, and coordinate that work with all other work.

3.3.11.22 The Contractor is fully responsible for any omissions or errors by subcontractors and must ensure the delivery of a complete and operational facility.

3.4 LABOR AND MATERIALS add the following

3.4.2 Delete the text of the paragraph and substitute the following:

Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive. The Owner has the right to back charge the Contractor when an expense has been incurred by the Owner due to an error, act, omission or failure to comply with the requirement of the Contract by the Contractor. The back charge will be deducted from the Owner's payment to the Contractor when the Owner re-orders a product, pays an invoice or otherwise incurs an expense. The Contractor has 30 days from the date of the back charge to dispute same, and if the Contractor fails to timely dispute such back charge, it shall be deemed to have fully accepted same same and to have waived its right to dispute the same.

3.4.2.1 Standard of Quality: The various materials and products specified in the Specifications by name or description are given to establish a standard of quality and of cost for bid purposes.

3.4.2.1.1 It is not the intent to limit the Contractor to any one material or product specified, but rather to describe as the minimum standard.

3.4.2.1.2 When proprietary names are used as the “Basis of Design”, for specified products or equipment, they shall be followed by the words, “or approved equal in

quality necessary to meet the specifications", unless otherwise indicated elsewhere in the Contract Documents.

3.4.2.2 The Architect will evaluate alternatives and substitutions and shall be the sole judge of whether the alternatives (substitutions), are acceptable or not.

3.4.2.2.1 The burden of proving the alternatives (substitutions), are equal or better to the specified product is that of the Contractor.

3.4.2.2.2 Contractor shall submit request for substitution in accordance with substitution procedures indicated elsewhere in the Contract Documents.

3.4.2.2.3 Any alternative names or products which do not meet the Specifications will not be accepted.

3.4.2.2.4 Contractor is expected to offer a credit for requested substitutions, or provide the specified product if available.

3.4.3 Delete the text of the paragraph and substitute the following:

The Contractor shall maintain a force of skilled workers sufficient to accomplish the Work at the Project site at all times and all Work shall be performed under the supervision of an experienced and competent Project Superintendent (as that term is defined in Section 3.9 of this Contract. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

3.4.4 Insofar as practical or required to obtain a full warranty, except as otherwise specified or shown, the material or product of one Manufacturer shall be used throughout the work for each specified purpose.

3.4.5 All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in strict accordance with the Manufacturer's directions. Should such directions conflict with the Specifications, the Contractor shall request (in writing) clarification from the Architect before proceeding.

3.4.6 All workmanship, equipment, materials, and articles incorporated in the work are to be of the best grade of their respective kinds for the purpose. Where equipment, materials or articles are referred to in the Specification as "equal to" any particular standard, the Architect shall decide the question of equality. Contractor shall furnish to the Architect for its approval the name of the Manufacturer of material, machinery, mechanical and other equipment which he contemplates installing, together with their respective performance capacities and other pertinent information to avoid delays. When required, Contractor shall furnish, for the Architect's approval, full information concerning materials, or articles which he contemplates incorporating in the work. Samples of materials shall be submitted for approval when and as directed. Material, machinery, equipment, and articles installed or used without such written approval shall be at the risk of subsequent rejection.

3.4.7 No previous inspection or certificate of payment shall be held as an acceptance of defective work or materials or to relieve Contractor from the obligation to furnish sound materials and to perform good satisfactory work. The Architect shall be the sole judge of the materials and work furnished.

3.4.8 If the Architect deems it inexpedient to correct defective work not otherwise performed or completed in strict accordance with the Contract Documents, the

difference in value between such work and that of the work, materials, and conditions as specified, together with a fair allowance for damage shall be deducted from the Contract price.

3.4.9 Materials and equipment stored on the site shall not be placed directly on the ground and shall be completely covered and suitably protected to the Architect's and Owner's satisfaction.

3.4.10 Only manufactured products of the United States, wherever available, shall be used on the Project.

3.4.11 No later than seven (7) days from the date of this Agreement, the Contractor shall provide a list showing the name(s) of the manufacturer(s) proposed to be used for the Project. The Architect will promptly reply in writing to the Contractor stating whether the Owner or the Architect, after due investigation, has reasonable objection to any such proposal. If adequate data on any proposed manufacturer is not available, the Architect may state that action will be deferred until the Contractor provides further data. Failure to object to a manufacturer shall not constitute a waiver of any of the requirements of the Contract Documents, and all products furnished by the listed manufacturer must conform to such requirements.

3.4.12 Any request by the Contractor, which is made after the completion of bidding, to substitute any labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, or other facilities or services which is contrary to the provisions of the Drawings, Specifications, or Schedules, shall be reviewed and approved or rejected by the Architect. The Contractor shall be solely responsible for any delay caused by the request, and for the costs and expenses of the Architect's review of the request. The Architect shall be entitled to reject the request for any reason, including the Architect's or the Owner's subjective determination of the relative quality, compatibility, or desirability of the substitution.

3.5 WARRANTY Add the following:

3.5.1 Delete the text of the paragraph and substitute the following:

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect or Construction Manager, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Said warranty shall not shorten or truncate any time periods set forth by a Manufacturer's Warranty. All Maintenance warranties provided by the Contractor shall be for at least 2 years from the date of Substantial Completion as defined by this Agreement.

3.5.2.1 The Contractor hereby assigns to the Owner, effective upon termination of this Contract, all manufacturers' and suppliers' warranties relating to the Work, and the Contractor shall, upon request of the Owner, execute any document reasonably requested by the Owner to effectuate such assignment. If the Owner attempts to enforce a claim based on a manufacturer's and/or supplier's warranty, and such

manufacturer or supplier refuses to honor such warranty based in whole or in part on a claim of defective installation by the Contractor, the Contractor shall be responsible for any resulting loss or damages incurred by the Owner as a result of the manufacturer's or supplier's refusal to honor such warrant. The Contractor's obligation under this Section shall survive the expiration or earlier termination of the Contract. The warranty period for all work of each Contractor shall be two (2) years from the date of final inspection and acceptance by the Owner unless otherwise specified. The Owner will be responsible for labor costs associated with the installation of these parts. The General Contractor will ensure that the Mechanical Sub-contractor fulfills this obligation.

3.5.3 In addition to the warranties set forth in the Contract Documents, the Contractor warrants that:

3.5.3.1 All materials and equipment furnished under this contract shall be of good quality and new unless otherwise authorized by the Owner. Any applicable manufacturer's warranties shall be transferred to the Owner by the Contractor at no additional cost or expense to the Owner.

3.5.3.2 Title to all work, materials, and equipment will pass to the Owner free and clear of all liens, claims, security interests, or encumbrances.

3.5.3.3 The Work will be free from defects not inherent in the quality of the Work in the Contract Documents required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. A two (2) year warranty of the materials, equipment, and work shall commence from the date established by the Owner as of the date of substantial completion for the entire project. This will apply to all materials and equipment (including but not limited to HVAC equipment) that the Owner may begin to use prior to the established date of substantial completion.

3.5.3.4 During the twenty-third month after the date of substantial completion of the work, the Owner, Architect, and the Contractor shall review the work to confirm the requirements of the Contract have been satisfied. Any corrective work necessary will be addressed at that time, prior to expiration of the warranty. The requirement will not modify any of the Contractor's obligations relative to warranties that are in effect for a period greater than two years.

3.5.3.5 If within the warranty period, any portion of the materials, equipment, and work is found to be defective or not in accordance with the contract documents, the Contractor shall correct the problem at its own cost and expense. The payment of the contract sum shall not constitute an acceptance of the work not performed in conformance with the contract documents.

3.6 TAXES renumber first paragraph to 3.6.1 and add the following:

3.6.2 The Owner is exempt under the provisions of the New Jersey Sales and Use Tax Act. Bidders are expected to comply with the provisions of the Act and rules and regulations promulgated pursuant thereto to qualify for exemptions with reference to any and all labor, service and materials supplied to or furnished in connection with the work to be performed. New Jersey State Sales and Use Tax on labor, service and

materials provided by the Contractor, its Subcontractors, and suppliers used in this Project shall not be included in its Bid.

3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS add the following:

3.7.1.1 It shall be the obligation of the Contractor to review the Contract Documents and to determine and to notify the Owner and Architect of any discrepancy between building codes and regulations of which the Contractor has knowledge or should be reasonably able to determine.

3.7.1.2 The Contractor shall not violate any zoning, setback or other requirements of applicable laws, codes and ordinances, building codes, rules or regulations. The Contractor shall promptly notify the Architect in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.1.3 Contractor to pay for individual licenses.

3.7.1.4 To the extent Contractor pays any permits, fees, including connection and/or tap-in fees not otherwise properly due according to the terms of the Contract Documents, the Owner shall be entitled to any refund relating thereto. The Contractor agrees to assign any and all rights to said refund or refund claim to Owner. The Contractor and all Subcontractors hereby assign to Owner all rights to claim any such refund claim and to any resulting refund and hereby appoint the Owner as their Attorney-in-Fact to execute and acknowledge in their respective names and to prosecute such refund claims before administrative agencies and courts in New Jersey having jurisdiction over such claims. The Owner or its agent shall have the right to review the books and records of Contractor and all Subcontractors for the purpose of documenting and substantiating any such refund claim. The Contractor and all Subcontractors must provide full cooperation by making all relevant documents and records available for review.

3.7.1.5 The required Building Permit or Permits shall be secured and paid for by the Contractor for his trade; or by the Prime Contractor in charge of the Work when the Contract combines more than one trade under a Single Contract. Contractors will be reimbursed for all such fees. This shall include permits required for the Construction Manager’s trailer, only if such fees are pre-approved in writing by the Owner.

3.7.2.1 Subject to the other terms and conditions of the General Conditions, It is not the Contractor’s responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing within 5 days, and necessary changes shall be accomplished by appropriate Modification. The Contractor’s responsibility is limited to identifying and reporting any patent discrepancies or inconsistencies in the Contract Documents. It is understood that the Contract Documents requirements may exceed these requirements.

3.7.3.1 The Contractor is responsible for the scheduling and coordination of any inspections covered by local Code enforcement officials or agencies. The Construction Manager is to be notified of all scheduled inspections when they are ordered. The Contractor must further ensure that the work to be inspected is properly completed and ready for inspection and that all equipment necessary to conduct the inspection (i.e. gauges, meters, etc.) is in place and in proper working order.

3.7.3.2 The Contractor shall be solely responsible for the coordination and scheduling of the utility company. The Contractor must plan to allow a minimum of 60 days' notice when the Utility Company is to furnish new poles or equipment. In the event the Owner is required to enter into a formal agreement with the Utility Company, the Contractor agrees to be bound by the terms thereof and to assume full responsibility for all requirements and obligations imposed upon the Owner by the Utility Company, including but not limited to any indemnification provisions.

3.7.4 Concealed or Unknown Conditions: renumber the first paragraph to 3.7.4.1 and add the following

In condition (1) add the words "elevational, dimensional," before the words at the beginning of the sentence.

3.7.4.2 No adjustment in Contract Time or Contract Sum shall be permitted, however, in connection with a concealed or unknown condition that does not differ materially from those conditions disclosed or that reasonably should have been disclosed by the Contractor's (i) prior inspections, tests, reviews, and pre-construction services for the Project, or (ii) inspections, tests, reviews, and pre-construction services that the Contractor had the opportunity to make or should have performed in connection with the Project.

3.8 ALLOWANCES delete paragraph 3.8.1 and replace with the following:

3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by qualified contractors.

3.9 SUPERINTENDENT add the following:

3.9.1.1 A Superintendent for the Contractor shall be required for the overall project and a Foreman shall be required at each project site –at any time work is ongoing, including work performed by subcontractors. The number of necessary assistants to the Superintendent shall ensure that all areas where work is in progress are adequately supervised by the Contractor's Superintendent or one of his assistants. If, in the Architect's or Construction Manager's opinion, the quality or progress of the work are affected by lack of adequate supervision, the Contractor shall be required to increase the number of supervisory personnel at no additional cost to the Contract sum.

3.9.1.2 When the project involves multiple project sites the Contractor is to assign a separate superintendent to each site who will be responsible for that particular site only.

3.9.1.3 The number of necessary assistants to the superintendent shall be such that work in progress shall be adequately supervised by each Contractor's superintendent or one of its assistants. If, in the Architect's opinion, the quality or progress of work is adversely affected by lack of adequate supervision, the Contractor shall increase the number of supervisory personnel at no increase to the Contract sum.

3.9.1.4 The superintendent shall attend all progress meetings, shall attend all coordination and scheduling meetings and such other meetings as may be reasonably requested and scheduled by the Construction Manager. The superintendent shall be promptly replaced by the Contractor if he or she fails, without good cause, to be present as required. In the event of any absences due to illness, vacation, or other absence approved by the Construction Manager, Contractor shall provide a substitute qualified representative.

3.9.2. Delete the text of the paragraph and substitute the following:

The Contractor, as soon as practicable after award of the Contract, shall notify the Owner, through the Architect and Construction Manager , of the name and qualifications of their proposed project manager and superintendent. Within ten (10) days following receipt of Notice to Proceed, the Contractor shall submit a resume of the proposed project manager and the superintendent who will be on site full time. The resume shall include at least three (3) recent projects of similar scope, with the contact information (names and telephone numbers) of Owner and Architect representatives for each project. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect or construction manager (1) has reasonable objection to the proposed Project Manager and/or superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

3.9.3 Delete the text of the paragraph and substitute the following:

The Superintendent shall not be removed from the work until all corrective and punch list items are completed to the Owner’s satisfaction.

3.9.4 The Contractor shall not change the superintendent during the course of construction without written authorization of the Construction Manager and Owner. The Owner shall be provided information regarding all proposed superintendents.

3.10 CONTRACTOR'S CONSTRUCTION AND SUBMITTAL SCHEDULES add the following:

3.10.1.1 Within fifteen (15) days after the date of the Notice to Proceed, the Contractor shall submit a draft Critical Path Method (CPM) with arrow network diagram Progress Schedule upon which shall be indicated the dates for starting and the dates for completion of all contracts and all divisions of the work in a manner which will coincide with the Time for Completion. Contractor’s Construction Schedule shall be in accordance with requirements indicated elsewhere in the Contract Documents.

3.10.1.2 The schedule shall not exceed time limits current under the Contract Documents for substantial completion of any phases and that of the entire Project. The Contractor’s Construction Schedule shall be updated by the Contractor to reflect the status of its work in relation to the Contractor’s Construction Schedule, and any recommended changes in the sequencing and scheduling. The Contractor’s Construction Schedule shall be updated at least every 30 calendar days or updated as often as deemed necessary by the Architect. Upon 4 working days of such request by the Architect, the Contractor shall submit a revised draft Construction Schedule update to the Architect. The updated Contractor’s Construction Schedule will be reviewed at each Job Meeting and the Contractor is required to have a representative present at the Job Meeting with written authorization from the President of the Company or Corporation to review, agree upon, and sign-off on any approved and agreed upon changes to the updated Contractor’s Construction Schedule. Failure by Contractor to correct the scheduled update in the time required may result in liquidated damages being assessed against the Contractor for the failure of the Project to be completed within the designated time. Any acceleration of the Contractor’s Construction Schedule shall be agreed upon and approved by the Architect and Owner’s designee.

3.10.1.3 The Contractor shall immediately, after being awarded the contract, prepare and submit to the Architect, a submittal schedule which will be reviewed by the Architect for the orderliness of the submittals by the Contractor. This schedule shall be provided to the Architect for approval by the Architect within fourteen (14) days of

receipt of Contract by the Contractor. The schedule shall be coordinated with the Project's Construction Schedule and shall allow the Architect reasonable time to review submittals. The Contractor to prioritize submittals to ensure timely review, when any particular item of work requires expediting it will be noted.

3.10.2.1 The Contractor shall deliver written evidence to the Architect that materials and equipment necessary for the timely installation and completion of the Work will be available, provided that failure to deliver such written evidence shall not excuse Contractor's obligation to timely furnish and install materials and equipment and to complete the Work.

3.10.3 Delete this paragraph and replace with the following:

The Contractor shall cooperate with the Owner in providing schedules updates and notification notices which may impact the Owner's operations. The Contractor will coordinate with the Owner to provide school bus companies, trash hauling companies, and others with the proposed construction schedules, anticipated detours, and duration.

3.10.4.1 If the General Construction Work Contractor fails to perform its duties as the Scheduling Coordinator adequately or to the Owner's satisfaction, the Owner may, in addition to its other rights and remedies, appoint a substitute Scheduling Coordinator who shall act in the place and with the authority of the original Scheduling Coordinator. In that event, the Owner may, in its sole discretion, choose one of the Separate Prime Contractors or an Independent Consultant as the substitute Scheduling Coordinator. The cost and expense incurred by the Owner to engage such substitute scheduling Coordinator shall be charged to and borne by the General Construction Work Contractor and its Surety.

3.10.4.2 The Contractor's failure to cooperate and participate with the Owner and separate Prime Contractors in the development and review of construction schedules as provided in this Section 3.10 shall be a material breach of its obligations, entitling the Owner to exercise all rights and remedies under the Contract Documents and applicable law.

3.10.4.2.1 In no event shall any revision to any construction schedule constitute the basis for an adjustment in the Contract time or the Contract Sum unless such adjustment is agreed to by the Owner, the Architect and achieved by a Change Order.

3.10.4.2.2 Float shall belong to the Project and all "float time" belongs exclusively to the Owner and may be used as the Owner, if in its sole discretion determines.

3.10.5 The Contractor shall work its forces overtime, at its expense, if required to maintain the Progress Schedule established.

3.10.6 The Contractor shall make proper assignments of employees in order to preclude labor, jurisdiction or like dispute, and if such disputes arise, do all things necessary to affect a prompt settlement thereof, including reference of such disputes to labor representatives or other established construction industry agencies for resolution, and be bound by their decisions.

3.10.7 The Contractor shall, within 24 hours after rejection of Work pursuant to Subparagraph 4.2.6 of the General Conditions, remove all materials and equipment so rejected and immediately replace said Work, at its cost, to the satisfaction of the Architect. Should the Work of the Owner or other contractors be damaged by such removal or replacement, the Contractor shall reimburse the Owner and other

contractors and subcontractors for all costs incurred by them for correcting said damage.

3.10.8 The Contractor shall perform the work in accordance with the most recent schedule submitted to the Architect. In the event the Contractor fails to perform work in accordance with the schedule, at the Architect's or Construction Manager's request, the Contractor shall provide a recovery schedule, reflecting the Contractor's commitment to complete the work in accordance with the contract documents, including but not limited to double shifts, overtime, evening, and weekend work; at the Contractor's expense. Nothing contained herein shall be construed so as to prevent the Owner from resorting to its contractual remedies, including but not limited to liquidated damages, withholding of certification of payment, and termination due to Contractor's failure to perform work in accordance with the schedule.

3.11 DOCUMENTS AND SAMPLES AT THE SITE renumber first paragraph to 3.11.1 and add the following:

3.11.2 The Construction Manager shall receive a copy of all correspondence transmitted to the Owner, Architect, and their consultants, concurrent to its issuance to those parties.

3.12 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES add or modify the following:

3.12.1.1 Should Contractor wish to substitute a specified item, Contractor will submit a complete Submittal Matrix For Equivalent or Substitution Evaluation as Approved Equal form as provided in Section 006000 - Project Forms prior to the Architect/Engineer's consideration of a substitution.

3.12.4 Delete reference to Construction Manager throughout the Paragraph.

3.12.4.1 Architect's review is for general conformance with the Design Concept and Contract Documents. Markings or comments shall not be construed as relieving the Contractor from compliance with all requirements of the Project Manual, Drawings, and Addenda. No departures there from, are to be considered as authorizing extra work or relieving the Contractor of work required within the contract. The Contractor remains responsible for materials, dimensions (both vertical and horizontal), details, and accuracy for confirming and correlating all quantities and dimensions, and warranty/guarantee requirements and other conditions of the contract, etc. for selecting fabrication process and techniques of assembly, for performing this work in a safe and satisfactory manner, and of coordinating this work with that of all other trades.

3.12.5 Delete this paragraph and replace with the following:

The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents or otherwise required by the Owner or Architect in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action. Submittals involving color samples/selections are to be noted on the front cover page. The following submittal scheduled will be mandatory; time is from the date of the notice to proceed in consecutive calendar days: All contracts and trades - thirty (30) days.

3.12.6.1 Submittals that require coordination with other products, installation of other products, or owner operations, etc. shall be submitted together as a coordinated package or they will not be reviewed by the Architect until all products have been submitted. Any Initial approval of partial submittals are subject to change upon receipt of the complete package. Coordination of all items is the responsibility of the Contractor. Contractor will replace non-compatible components to the Architect's satisfaction at no additional cost.

3.12.8.1 Work performed contrary to the procedures set forth in this Article 3.12 shall be at the risk and expense of the Contractor. All shop Drawings used for fabrication and erection shall be those reviewed by the Architect, without modification. If change is found to be necessary on any reviewed shop Drawing, product data, or sample, it shall be resubmitted for further review.

3.12.9 Delete reference to Construction Manager throughout the Paragraph.

3.12.11 Detailed requirements are specified in the Division 1 Section 01300 relating to "Submittals." The Contractor must submit a shop drawing log prior to first application for payment. The shop drawing log, along with critical submittal, fabrication, and delivery schedules, must be included in the construction schedule. All shop drawings are to be submitted within 45 days of NTP. The shop drawing logs will be updated and submitted at each job meeting along with job meeting report form.

3.12.12 Submittals shall indicate materials, dimensions, seismic bracing in accordance with the latest IBC International Building Code, New Jersey Edition for Architectural, Mechanical and Electrical Component Seismic Design Requirements, and job conditions, including clearances required in relationship with the work of their trades. Contractor shall be responsible for verification of existing conditions and coordinating with the work of other trades. Drawings shall be of sufficient size and drawn to sufficient scale to clearly show all details.

3.12.13 Submittals shall indicate compliance with seismic design requirements in accordance with the latest International Building Code 2018, New Jersey Edition for Architectural, Mechanical and Electrical Component Seismic Design Requirements. Provide seismic calculations signed and sealed by a Professional Engineer licensed in the state where the Project is located as required.

3.12.14 Submittals of Shop Drawings and other data, where possible, shall be submitted electronically in PDF Format.

3.12.15 Material Safety Data Sheets (MSDS): Submit Material Safety Data Sheets directly to the Owner; do not submit to the Architect/Engineer unless otherwise indicated. Architect/Engineer will not review submittals that include MSDS and will return entire submittal for resubmission.

3.12.16 In accordance with N.J.S.A. 18A:18A-20, "American goods and products to be used where possible", only manufactured and farm products of the United States, wherever available, shall be used in this project.

3.12.17 Submittals shall contain a Contractor's stamp of approval, signed and dated by the submitting Contractor, prior to submission to the Architect. Such stamp of approval by the Contractor shall be confirmation that he has determined and verified materials, field measurements, and field construction criteria related thereto, and has checked and coordinated the information contained within such submittals. The Contractor shall also note in writing to the Architect, all deviations to the Contract Documents. Submittals will not be reviewed by the Architect/Engineer unless they

contain such a stamp containing the words “Reviewed and Approved” accompanied by the Contractor’s signature and date.

3.12.18 When brand, make, quality, etc., is not specified definitively, Contractor shall submit written documentation to the Architect for the particular kind of brand which he desires to use, altering or substituting others if not satisfactory.

3.12.19 Substitutions – All substitutions or deviations from plans and specs must be clearly noted as such on all shop drawings. The Contractor shall identify, coordinate, and pay for any additional requirements as a result of substitutions, deviations, etc., including necessary change orders and additional work of other trades. In addition, Substitution submittals shall be submitted no later than 30 days after NTP to provide time for comparison review. Substitutions are expected to be accompanied by a credit change order.

3.12.20 If a substitution submittal differs from the design intent of the Contract documents, and all associated modifications to the design intent are not identified and included with the submission, all consequential additional costs associated with the substitution including, but not limited to, modifications to existing and new construction, building structure, plumbing, HVAC, electrical systems and all other modifications to not yet constructed work shall be borne by the contractor responsible for the submittal.

3.12.21 Consequential Substitution Impact Fees: If the Contractor makes, or causes to be made, due to impact from approval of substitutions of other than specified equipment and components, any substantial change in the form, type, system, and details of construction from those indicated in the Contract Documents, the Contractor shall be responsible for payment of all impact costs arising from such changes. Impact costs include, but are not limited to, any additional costs to the Owner inclusive of Architectural, Engineering, and Attorney fees, Code Review and Permit fees as well as all documented impact costs borne by other Contractors resulting from such substitutions. Impact cost shall also include associated re-design, demolition and re-construction work, additional new construction work as may be required, and compliance with and maintenance of existing warranties, etc.

3.13 USE OF SITE add the following:

3.13.3 Contractors shall use the site in a manner that will cause minimum interference and maximum safety to the occupants of the building and the general public. Contractor must have prior approval of the Construction Manager for locations of stored materials, access, trailer locations, etc.

3.13.4 In addition to site utilization limitations and requirements shown on Drawings and indicated by the Contract Documents, the Contractor shall administer allocation of available space within Construction area so as to produce best overall efficiency in performance of total work of Project. The Contractor shall schedule deliveries so as to minimize time and space requirements for storage of materials and equipment on site.

3.13.5 Contractors may seek approval from the Owner to work weekdays, evenings, nights, weekends, and may be subject to reimburse/pay for all costs, i.e., custodial fees/OT, etc. Refer to the section 011000 - Summary for additional work restrictions. It is the Contractor’s responsibility to ensure that its work is performed at times permitted by local ordinances and within such noise levels as may be mandated by the Township. The Contractor shall assume full responsibility for any violations committed in whole or in part by the Contractor or its subcontractors which may be charged to or assessed against the Owner and shall indemnify and hold harmless the

Owner for any and all fines, costs and expenses of any kind, including reasonable attorney's fees, which may be charged to, assessed against, or incurred by the Owner in connection with such violations.

3.13.6 The Contractor shall place its trailers and store its equipment and materials only at locations to be assigned by the Construction Manager. All stored materials shall be protected from damage due to weather, theft, or vandalism. These items shall be relocated or removed to maintain phasing schedules, or at the discretion of the Construction Manager when required for progress of the work. At the completion of the Project, any damage resulting from the placement of these items or storage of equipment and materials shall be corrected by the Contractor responsible to the satisfaction of the Construction Manager.

3.13.7 When the conditions and activity on the site results in it being necessary, the Contractor shall be responsible for procuring an offsite location for the purpose of material storage and employee parking. In addition to complying with all local traffic and parking ordinances, the Contractor will not be permitted to stage material deliveries on the streets in the area of the Project site or otherwise impact the residential or commercial activities of all surrounding public and private entities.

3.13.8 The Contractor shall schedule deliveries so as to minimize disruption to the School operations, time and space requirements for storage of materials and equipment on site. Protection of construction materials and equipment from weather, theft, damage, and all other loss or damage is the sole responsibility of the Contractor.

3.13.9 Swinging of the crane boom for placement, hoisting and work in general over occupied space will not be permitted. Contractor shall provide additional barricades around staging and work areas as required at all times.

3.13.10 The Contractor is responsible for maintaining all temporary emergency egress routes. The General Contractor shall obtain approval from the Building and Fire Departments having jurisdiction for all temporary emergency egress routes.

3.13.11 The Contractor shall remove all dirt and mud resulting from the work from local roads on a continuing basis.

3.13.12 The Contractor is responsible for all dewatering required for the performance of the Work.

3.13.13 Periods of student testing: Certain grade levels have state mandated performance testing which takes place at certain times during the academic year. During these intervals, noisy operations may be curtailed. Contractors will be required to prepare construction schedules to coordinate with this restriction.

3.13.14 Location and weights of all equipment and materials that the Contractor intends to place on the slab shall be submitted to the Architect for review.

3.13.15 Only materials and equipment which are to be used directly in the Work shall be brought to and store on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage and all other adversity is solely the responsibility of the Contractor.

3.13.16 The Contractor and any entity for whom the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the Owner and Construction Manager.

3.13.17 Contractor shall ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work shall be free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any provision of the Contract Documents, Contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of (1) any areas and buildings adjacent to the site of the Work or (2) the Building in the event of partial occupancy, as more specifically described in Paragraph 9.9.

3.13.18 Without prior approval of the Owner and Construction Manager, the Contractor shall not permit any workers to use any existing facilities at the Project site, including without limitation, lavatories, toilets, entrances and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the Building, as amended from time to time. The Contractor shall immediately notify the Owner in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such and suggest alternatives through which the same results can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirement of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project site and the Building.

3.14 CUTTING AND PATCHING add the following:

3.14.3 The Contractor shall be responsible for all fire safing and fire stopping work relative to the work of their Contract and shall complete all such work in a timely manner so as not to delay or damage the work of subsequent trades and other Contractors.

3.14.4 Patching of exposed Work shall only be performed by skilled workers of the required trade.

3.15 CLEANING UP add the following:

3.15.1 Delete this paragraph and replace with the following:

The Contractor shall keep the premises clean at all times by removing dirt, rubbish and debris resulting from the Work. The Contractor shall remove all rubbish and debris at the end of each working day using metal containers or other approved waste management methods. The Contractor shall remove all rubbish, including cartons resulting from the installation of fixtures and equipment, on a daily basis or as otherwise approved by the Construction Manager. Prior to Substantial Completion of the Work, the Contractor shall perform a thorough cleaning of the surfaces related to their installations as may be required and outlined in the Specifications and to the satisfaction of the Architect.

3.15.1.1 The General Contractor shall be solely responsible for ensuring that all mud, debris, and litter from vehicles and equipment leaving the construction site is properly removed before entering any municipal streets or adjoining properties. The Contractor must also remove any mud, debris, or litter that may fall upon municipal streets or adjacent properties due to construction activities. Should the Contractor fail to adequately clean or wash down such areas within 24 hours of verbal or written

notice from the Municipality or Owner, the Owner reserves the right to arrange for the removal and cleaning at the Contractor's expense. All costs incurred by the Owner for this cleaning, including administrative and third-party service fees, shall be promptly reimbursed by the Contractor, without limitation of any other remedies available to the Owner under the Contract Documents..

3.15.1.2 The Contractor shall perform all daily clean up and removal of debris from the site including that of his subcontractors and other prime contractors. The Contractor shall maintain an adequate supply of laborers (minimum of one dedicated to general clean-up) and adequate dumpsters to accomplish daily clean up and regular removal of debris from the site and work areas. No debris, including masonry debris, will be allowed to accumulate in or around the building. The building must be maintained free of litter and debris on a daily basis. Under no circumstances shall flammable materials be allowed to accumulate. Prior to installation of finishes, the floors will be swept and kept free of dust and dirt until turned over to the Owner. The Contractor shall be fully responsible for managing and coordinating all site policing and clean-up operations, ensuring the site remains orderly and safe. The Contractor shall permit no accumulations of debris or waste of any kind at the site.

3.15.1.3 Final Clean-Up: The General Construction Contractor has the responsibility for the final clean-up and policing of the entire site after other contractors have removed their own waste materials, rubbish, equipment, tools and plant. In addition thereto, the General Construction Contractor shall perform or have performed the following immediately prior to the Architect's inspection for Substantial Completion:

3.15.1.3.1 Removal of all manufacturers' temporary labels from materials, equipment and fixtures.

3.15.1.3.2 Removal of all stains from glass and mirrors; wash, polish, inside and outside.

3.15.1.3.3 Removal of marks, stains, finger prints, other soil, dust, dirt, from painted, decorated, or stained woodwork, plaster or plasterboard, metal, acoustic tile, and equipment surfaces.

3.15.1.3.4 Remove spots, paint, soil, from resilient flooring.

3.15.1.3.5 Remove temporary floor protections; clean, wax, or otherwise treat as directed, polish all finished floors. Final vacuum all carpet.

3.15.1.3.6 Clean all interior finished surfaces, including doors and window frames, and hardware required to have a polished finish, of oil, stains, dust, dirt, paint, and the like; leave without finger prints, blemishes.

3.15.1.3.7 Final site clean-up shall extend beyond the Contract Limit Lines as reasonably required to insure the complete removal of all construction debris from the entire site, including staging areas.

3.15.2 Delete this paragraph and replace with the following:

If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor. The dirt, rubbish, and debris must be cleaned up, within 24 hours after written notice from the Owner. If not cleaned up, the Owner may arrange for such cleanup at the Contractor's expense without further notice.

3.16 ACCESS TO WORK add the following

3.16.1 The Contractor shall promptly notify the Construction Manager, Architect/Engineer and Owner of the presence of hazardous conditions at the site, including the start of hazardous operations or the discovery or exposure of hazardous substances.

3.16.2 Contractor to maintain reasonable access to site for structural steel erection including crane, steel deliveries, etc. Structural Steel Contractor will be responsible to coordinate requirements with Contractor and Construction Manager a minimum of 30 days prior to deliveries.

3.16.3 Contractor shall be responsible for snow plowing and snow removal as required to maintain parking area, access/egress to building and site for all Contractors, Subcontractors, Owner, Architect and Construction Manager.

3.16.4 All Contractors shall keep only necessary equipment on site and shall cooperate with Construction Manager regarding location of stored material. No Contractor shall be allowed to unreasonably encumber the Project site (or building) with equipment and stored material and shall afford other contractors reasonable opportunity for introduction and storage of their materials and for execution of other work.

3.16.5 All contractors will provide access for inspection of construction by the Architect and the Construction Manager, such access may include ladders, lifts, scaffold etc.

3.18 INDEMNIFICATION add the following:

3.18.1 Delete this paragraph and replace with the following:

To the fullest extent permitted by law the Contractor shall defend and indemnify and hold harmless the Owner, Architect, Architect's consultants, Construction Manager, and each of their agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting directly or indirectly from performance of the Work, including but not limited to:

(1) the acts or omissions of the Contractor, its agents, servants, officers, employees, subcontractors, subconsultants or any other person working at the Contractor's request, subject to its direction, or on its behalf;

(2) the loss of life or property, or injury or damage to the person, body or property of any person or persons whatsoever, that arises or results directly or indirectly from performance of the work or delivery of deliverables by the Contractor, its agents, servants, officers, employees, subcontractors, subconsultants, or any other person acting at the Contractor's request, subject to its direction, or on its behalf;

(3) any negligence, default, breach, or errors or omissions of the Contractor, its agents, servants, officers, employees, subcontractors, subconsultants, or any other person acting at the Contractor's request, subject to its direction, or on its behalf;

(4) violation or non-compliance with federal, state, local, municipal laws and regulations, ordinances, building codes (including without limitation the Americans with Disabilities Act, OSHA, Environmental Protection Act) arising from the performance or non-performance of; or arising out of conditions created or caused to be created by, the Contractor, its agent, servants, officers, employees, subcontractors, subconsultants, or any other person acting at the Contractor's request, subject to its direction, or on its behalf; or

(5) the use of copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of the work;

including whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18.

3.18.2.1 The Contractor's defense and indemnification obligation is not limited by, but is in addition to the insurance obligations contained in the contractual documents.

3.18.3 The Contractor agrees that any approval by the Owner of the work performed, and/or reports, plans, or Specifications provided by the Contractor shall not operate to limit the obligations of the Contractor under the Contract Documents; and that the Owner assumes no obligations to indemnify or save harmless the Contractor, its agents, servants, officers, employees, subcontractors, subconsultant, against all claims that may arise out of its performance or nonperformance under the Contract Documents; and that the provisions of the defense and indemnification clauses shall in no way limit the Contractor's obligations under the Contract Documents, nor shall they be construed to relieve the Contractor from any liability, nor preclude the Owner from taking any other actions available to it under any other provisions of the Contract Documents or otherwise at law or equity.

3.18.4 The provision of this section shall survive the termination of the Contract Documents.

3.18.5 The Contractor shall do all things necessary to prevent the filing of any mechanics or other lien against the Project. If a notice of lien, lien, or the like, alleging non-payment, should be filed, recorded, or served upon the Owner by a contractor, laborer, materialman, subcontractor, sub-subcontractor or any other person or entity claiming to have provided material or services on the Project, the Contractor shall either cause the same to be discharged of record within twenty (20) days after filing or, if the Contractor in its discretion and in good faith determines that such lien should be contested, it shall furnish such security as may be necessary to prevent any foreclosure proceedings against the Premises during the pendency of such contest. The Owner shall have the right to retain out of any payment to the Contractor then due, or thereafter to become due on this or any other project for the Owner, an amount sufficient to completely indemnify the Owner against the lien or potential lien.

3.19 REDESIGN (new section)

3.19.1 If the Contractor makes, or causes to be made, due to approval of substitute equipment or otherwise, any substantial change in the form, type, system and details of construction from those shown on the Drawings, he/she shall pay for all costs arising from such changes. The Contractor shall pay all Architectural and Engineering fees required to check the adequacy of such changes. Any changes or departures from the construction or details shown shall be made only after written approval from the Architect.

3.19.2 The Contractor represents and warrants the following to the Owner (in addition to the other representations and warranties contained in the Contract Documents), as an inducement to the Owner to execute the Owner-Contractor Agreement, which representations and warranties shall survive the execution and delivery of the Owner-Contractor Agreement and the final completion of the Work.

3.19.2.1 that he/she is authorized to do business in the State, County, and/or City where construction will take place at the Project and is properly licensed by all necessary governmental and public authorities having jurisdiction over him/her and over the Work at the site of the Project;

3.19.2.2 that he/she is familiar with all Federal, State, Municipal and department laws, ordinances and regulations, which may in any way affect the Work of those employed herein, including but not limited to any special acts relating to the Work or to the Project of which it is a part;

3.19.2.3 that such temporary and permanent Work required by the Contract Documents as is to be done by him/her, can be satisfactorily constructed and used for the purposes for which it is intended;

3.19.2.4 that he/she is familiar with local trade jurisdictional practices at the site of the Project;

3.19.2.5 that he/she has carefully examined the plans; specifications and the site of the Work, and that from his/her own investigations, he/she has satisfied himself/herself as to the nature and location of the Work, the character, quality and quantity of the surface and subsurface materials likely to be encountered, the character of equipment and other facilities needed for the performance of the Work, and the general local conditions, and all other materials which may in any way affect the Work or his/her performance;

3.19.2.6 that he/she has determined what local ordinances, if any, will affect his/her Work. He/She has checked for any County, City, Borough, or Township rules or regulations applicable to the area in which the Project is being constructed and in addition, for any rules or regulations of other organizations having jurisdiction, such as chambers-of-commerce, planning commission, industries, or utility companies who have jurisdiction over property on which the Work will be performed. Any costs of compliance with local controls are included in the prices/bid, even if documents of such controlling agencies are not listed specifically in the Contract Documents.

ARTICLE 4 – ARCHITECT AND CONSTRUCTION MANAGER

4.1 GENERAL Add the following:

4.1.4 In case of termination of employment of the Architect or the Construction Manager, the Owner shall appoint a successor whose status under the Contract Documents shall be that of the former Architect or Construction Manager.

4.2 ADMINISTRATION OF THE CONTRACT Add or modify the following:

4.2.1 The Architect and Construction Manager will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representatives (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the two-year period for correction of Work described in Paragraph 12.2. The Architect and Construction Manager will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract. The Owner has hired New Road Construction Management to provide on-site Project Management services. New Road Construction Management will be the Owner's Representative for this Project. Both the Construction Manager and the Architect will share administration duties, which will be delineated at the Pre-construction meeting. The Construction Manager will serve as the main point of contact for the Project, managing daily interactions with the Contractor, while deferring

to the Contractor for the means and methods of construction. The Architect will retain primary authority for final clarifications, determinations on disputes, design interpretations, and aesthetic decisions, as needed. Construction Manager will essentially be the main point of contact, defer to the Contractors for means and methods and will defer to the Architect for final clarifications and determinations of disputes, design issues, and aesthetics.

4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect/Engineer/Construction Manager for site visits and or redesign made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

4.2.4 Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Construction Manager. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be as required to maintain coordination and if necessary will be facilitated by Construction Manager to maintain effective coordination and prevent conflicts.

4.2.5 Delete the words "except to the extent required by Section 4.2.4,".

4.2.7 Add at the end of the paragraph the following, "The Construction Manager and the Architect may also nullify prior certifications of amounts due the Contractor, or portions thereof, for any reason set forth in the Owner Contractor Agreement."

4.2.9 Delete paragraph 4.2.9 in its entirety.

4.2.10 Delete paragraph 4.2.10 in its entirety.

4.2.11 Delete the word "Construction Manager" and replace with "Contractor".

4.2.11.1 Whenever a material, article or piece of equipment is identified on the Plans or in the Specifications by reference to Manufacturers' or Vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard, and any material article, or equipment of other manufacturers and vendors which will perform adequately equal to or better than, the duties imposed by the general design, will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Architect of equal or better substance and function. The material, article or equipment so proposed shall not be purchased or installed by the Contractor without the Architect's written approval.

4.2.11.2 The acceptance of any material or method shall be understood as an acceptance only insofar as conforming to Specification requirements, and not as an absolute acceptance without respect to the requirements of the Specifications.

4.2.11.3 The typical time frame is three weeks for the Architect to review, and four weeks for the Architect and Engineer to review when an Engineer is also involved in the review.

4.2.12 Delete all references to "Construction Manager".

4.2.13 Delete the word "Construction Manager" and replace with "Architect".

4.2.15 Delete the following portion of the first sentence: "Utilizing the documents provided by the Contractor,".

4.2.16 Delete paragraph and replace with: "The Construction Manager will assist the Architect in conducting inspections to determine the dates of Substantial

Completion and the date of final completion. The Architect will issue Certificates of Substantial Completion in conjunction with the Construction Manager pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents."

4.2.17 Delete this paragraph and replace with the following:

If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in the Agreement between the Owner and Architect.

4.2.18 Delete this paragraph and replace with the following:

The Architect will interpret and decide matters concerning performance under and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limit agreed upon or otherwise with reasonable promptness, but in no event more than fifteen (15) days after receipt of the request by the Architect.

4.2.21.1 All requests for information shall be submitted by the Contractor, in the Architect's discretion, on the Request for Information form provided by the Architect. The Contractor shall clearly and concisely set forth the issue for which the clarification or interpretation is sought and why a response is needed from the Architect. In the Request for Interpretation, the contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

4.2.21.2 The Contractor shall bear all costs associated with the Request for Information including but not limited to architectural fees where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor prepared coordination Drawings, or prior Project correspondence or documentation.

4.2.21.3 The Architect will review all Requests for Information to determine whether they are Requests for Information with the meaning of this term. If the Architect determines that the document is not a Request for Information, it will be returned to the Contractor, unreviewed as to content, for resubmittal on the proper form and in the proper manner.

4.2.21.4 Responses to Requests for Information shall be issued within five (5) working days of receipt of the request from the Contractor unless the Architect determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Architect will within five (5) working days of the receipt of the request, notify the Contractor of the anticipated response time. The Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the Request for Information provided that the Architect responds within reasonable promptness.

4.2.21.5 Responses from the Architect will not change any requirement in the Contract Documents. In the event the Contractor believes that a response to a Request for Information will cause a change to the requirements of the Contract

Documents, the Contractor shall immediately give written notice to the Owner stating that the Contractor considers the response to be a Change Order. Failure to give such written notice immediately shall waive the contractor's right to seek additional time or cost under these General Conditions.

4.2.22 The Contractor is required to have a representative available, through final completion of the Project, to answer the telephone between the hours of 8:00 A.M. and 5:00 P.M. If business phones cannot be answered in person during these hours, the President of the Company or Corporation shall provide the Architect with its home phone number and cellular phone number. Failure of the Contractor to comply with this requirement will be cause for rejection of the Contractor's Application and Certificate for Payment.

4.2.23 Any correspondence (mail, delivery service, facsimile, e-mail, etc.) received after 3:00 PM prevailing time (the end of the business day) will be recognized as being received on the beginning of the next business day, Saturdays, Sundays, or holidays excepted and correspondence received on Saturdays, Sundays, and holidays will be recognized as received on the beginning of the next business day.

ARTICLE 5 - SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK add the following:

5.2.1 Delete this paragraph and replace with the following:

Within twenty (20) days after the Notice to Proceed, the Contractor shall furnish to the Architect in writing, for review by the Owner and the Architect, a list of the names of all subcontractors, sub-subcontractors, fabricators, manufacturers, sources of supply, articles, devices, fixtures, pieces of equipment, materials and processes proposed for each item of work on List of Subcontractors, AIA Document G805. The Architect will promptly notify the Contractor, in writing, if either the Owner or the Architect, after due investigation, has any objection to any names on such list. Failure of the Owner or Architect to make objection promptly to any name on the list shall constitute acceptance of such name. In no event shall the Contractor substitute a subcontractor who is named by the Contractor in the bid documents. A Business Registration Certificate and a Public Works Contactor Registration Act Certificate must be furnished for each subcontractor as required by applicable law.

5.2.2.1 In submitting the names of subcontractors, the Contractor shall list 1) the extent of limitations of the trades or work included by Specifications paragraph number, 2) the name and address of the subcontractor; 3) the name and address of all sub-subcontractors for each significant subdivision of the trade or work, and if required by the Architect, 4) reference in the form of a list of at least three (3) jobs similar in size and quality to this Project performed in the last five (5) years, with name and location of work, dollar value and names of the Owner and Architect.

5.2.2.2 In submitting sources in supply of materials, articles and pieces of equipment including those under subcontracts and sub-subcontracts, the Contractor shall list 1) the extent or limitations of the trades or work included by Specifications, paragraph number 2) the name and address of the source of supply 3) the name of the manufacturer of the items.

5.2.3 Delete this paragraph and replace with the following:

If the Owner, Construction Manager, or Architect has objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager, or Architect has no objection.

5.2.4 Delete this paragraph and replace with the following:

The Contractor shall not substitute a Subcontractor, person or entity previously selected without the consent of the Owner.

5.2.5 Contractor shall defend, indemnify, and hold the Owner harmless against any claims brought by a subcontractor, supplier, or any other entity, 1) claiming a violation of N.J.S.A. 18A:18A-18 or the improper or illegal substitution of a subcontractor, supplier or other entity, 2) against any municipal mechanics' lien, or other lien or encumbrance filed by any subcontractor, sub-subcontractor, or supplier, and/or 3) any claim by a subcontractor, sub-subcontractor, or labor or material supplier alleging non-payment.

5.3 SUBCONTRACTRACTUAL RELATIONS add the following:

5.3.1 Where Contractor sublets portions of the Work, the entire responsibility for the subdividing of Work rests with the Contractor. The Owner and the Architect are not responsible for the manner of the subdivision of the Work and neither will enter into nor settle disagreements or disputes between Contractor and Subcontractors. However, should such disputes adversely affect the project's progress, quality, or timely completion, the Contractor remains fully responsible for addressing and resolving these issues at no additional cost to the Owner. The arrangement of Specifications and the manner of graphic illustration of Drawings are for convenience of reference and do not comprise any exacting method of subdividing Work for purposes of subcontracting, except where the Contract Documents require an undivided responsibility for certain Work. The Contractor must use these documents to ensure accurate and effective subcontracting and work division. The Contractor is responsible for interpreting these documents in a manner that ensures full compliance with the contract requirements and the seamless execution of the Work.

5.3.2 Contractor shall require each Subcontractor to (1) Inspect surfaces and job conditions before beginning Work at Project site, (2) Accept or cite necessary corrections in surfaces and job conditions before beginning Work at Project site, and (3) Protect his own materials, equipment and Work from damage, injury or loss due to weather or due to Work of the Contractor, other Subcontractors, or other Contractors. The best means of protection shall be supplied, and removed when no longer required. The Contractor must oversee and verify that these protections are in place and report any significant issues to the Owner and Architect immediately. The Contractor remains liable for any damages or delays resulting from Subcontractors' failure to meet these requirements.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS delete the following:

5.4.2 Delete this paragraph in its entirety.

5.4.3 Renumber paragraph to 5.4.2.

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND AWARD SEPARATE CONTRACTS add the following:

6.1.3 Delete this paragraph and replace with the following:

Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces, the Owner shall be deemed to be subject to the same obligations and to have the same rights that apply to the Contractor under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6 and Articles 10, 11 and 12, provisions relating to Construction Schedules, and Supplemental Project Requirements relating to coordination and cooperation among Contractors.

6.1.3.1 The Contractor shall coordinate all phases of the Work with the Architect, Construction Manager, and the Owner's representatives and own forces.

6.2 MUTUAL RESPONSIBILITY add the following:

6.2.1 Delete this paragraph and replace with the following:

The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents. Should the Contractor be damaged by any other separate Contractor on the work by reason of such other Contractor's failure to perform properly his Contract with the Owner, no action will lie against the Owner and the Owner shall have no liability therefore, but the Contractor may assert his claim for damage against such separate Contractor as a third party beneficiary under the Contract between such other Contractor and the Owner. The Contractor's remedy is limited to pursuing action against the responsible separate Contractor, and the Owner shall remain exempt from any financial responsibility or liability for such damages.

6.2.3 Delete this paragraph and replace with the following:

Cost attributed to delays, or improperly timed activities or defective construction shall be borne solely by the parties responsible for such issues. therefore, excepting however, The Owner , Construction Manager and Architect who shall not be liable to any Contractor, Subcontractor or Sub-subcontractor for claims or damages of monetary or other nature caused by or arising out of delays contemplated or not contemplated at the signing of the Contract. The sole remedy against the Owner for delays shall be the allowance to a successful claimant of additional time for completion of Work.

6.2.4 Delete this paragraph and replace with the following:

The Contractor shall indemnify and hold the Owner harmless from any claims or damages brought by a separate contractor arising out of actions or omissions of the Contractor, its Subcontractors or suppliers in performing their Work under the Contract Documents. Should the Contractor cause damage to the work or property of any Separate Contractor on the Project, the Contractor shall, upon due notice, promptly settle with such other Contractor by agreement or otherwise account of any damage alleged to have been so sustained, the Contractor shall defend such proceeding at his/her own expense, and if any judgement against the Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Owner for any attorney's fees and court costs which the Owner has incurred.

6.2.4.1 Should a Contractor cause damage to the work or property of any other Contractor or Vendor on the project, the Contractor shall, upon due notice, promptly settle with such other Contractor or Vendor by agreement or otherwise resolve the dispute. If such other Contractor or Vendor sues or institutes arbitration proceedings

against the Owner on account of any damage alleged to have been sustained, the Contractor shall indemnify and hold harmless the Owner Architect, and Construction Manager and defend them in such proceeding at its own expense, and if any judgment against the Owner, Architect, or Construction Manager arises therefrom, the Contractor shall pay or satisfy it, and shall also reimburse the Owner, Architect, or Construction Manager for any Architect's, Engineer's, Construction Manager's, and Attorney's fees and Court costs which the Owner or Architect has incurred.

6.2.6 The Contractor shall be responsible for proceeding with work in a manner that will not void any and all guarantees and warranties held by the Owner on the existing systems and facility. Contractors shall include in their Bid sufficient cost to hire a representative of the Manufacturer or Contractor covering a warranty or guaranty on existing materials to advise on, and oversee work being done that affects the warranties and guaranties so as not to void existing warranties and/or guaranties. Contractor shall comply with the Manufacturer's/Contractor's representative's requirements to maintain guaranties and warranties intact.

6.3 OWNER'S RIGHT TO CLEAN UP replace paragraph with the following:

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, or the contractor refuses to clean up debris the Owner may, after 24 hours written notice, clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible as the Owner determines to be just.

ARTICLE 7 - CHANGES IN THE WORK

7.1 GENERAL add the following:

7.1.2 Delete this paragraph and replace with the following:

A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor, who will be obligated to perform the work, under protest if necessary, but in no case shall they refuse to progress the work. An order for a minor change in the Work may be issued by the Architect alone.

7.1.4 The allowance for overhead and profit combined may vary according to the nature, extent, and complexity of the work, but shall in no event exceed the following schedule:

.1 For the Contractor, for Work performed by its own forces 10% of cost

.2 For each Subcontractor, for Work performed by its own forces 10% of cost

.3 For the Contractor, for Work performed by a Subcontractor 5% of cost

In no event shall the total allowance for overhead and profit exceed 15% of the net cost of the work, including all lower tiered sub-subcontractors.

7.1.5 If the net value of a change results in a credit from the Contractor or Subcontractor, the credit given shall be the net cost without overhead or profit. The cost as used herein shall include all items of labor, materials, and equipment together with the cost of all insurance, bonds, use of small tools, incidental job burdens, general office expenses, engineering, cleaning, transportation and all other conditions referenced in the Contract Documents. No percentages for overhead and profit will be allowed on employment taxes under FICA and FUTA that will be based on the

Contractor's last quarterly 941 form. When both additions and credits are involved in any one change, the allowance for overhead and profit shall be figured on the basis of net increase, if any.

7.1.6 Where they apply, unit prices for additions or deductions as stated in the Contract Documents shall always be used as the basis for determining the cost or credit to the Owner for any changes made no matter what overall method is used for such determination.

7.1.7 Lump sum quotations for changes in the Work will not be accepted. Proposals shall be completely itemized and broken down. They shall be accompanied by such supporting data as the Architect may require such as copies of Subcontractors or Vendor's quotations quantity take-off sheets or other similar information. The Owner has the right to audit all changes and claims.

7.2 CHANGE ORDERS add the following:

7.2.1 Add the Number 7.2.1 to the first Paragraph and replace the words "Construction Manager" with "Architect".

7.2.2 Change orders shall be subject to the restrictions contained in N.J.A.C. 6A:26-4.9. Any provision of the General Conditions of the Contract for Construction which is inconsistent with N.J.A.C. 6A:26-4.9 shall be superseded by the State Board of Education regulation.

7.2.3 Any change in work authorized in writing by the Owner and Architect that will require a change in the cost of the work, whether an additive or deductive change in cost, shall show a complete cost breakdown of labor, material, equipment and insurance, and appropriated overhead and profit.

7.2.4 When a Change Order involves both additions and deletions in material, the net quantity is to be determined and the appropriate overhead and profit is to be applied to the net quantity.

7.2.5 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

The total allowance for overhead and profit, included in the total cost to the Owner, shall not exceed fifteen percent (15%) of the value of the related Work. This percentage is applied to the total cost of the Work, including all labor, materials, and other direct costs.If the Work is paid for using a Contract allowance , the contractor will be entitled to add 15% overhead and profit to their costs. Additional bond and insurance costs are capped at 1.5% of the total cost. These costs will be calculated at the end of the project with a final change order to reconcile any remaining allowance. The total labor burden allowable is subject to prevailing wage rate for the project, including appropriate base rate, plus labor burden on base rate, plus stated fringe benefits, to equal total allowable hourly labor burden. No charges for small tools, travel, delivery, additional field or home office supervision will be allowed on change orders.

7.2.6 For any extra work or portion thereof performed by the General Contractor, the cost to the Owner shall include the cost of the extra work plus a maximum allowance of fifteen (15%) percent for overhead and profit.

7.2.6.1 For any extra work or portion thereof performed by Subcontractor(s), the cost to the Owner shall include the cost of the extra work to the Subcontractor plus a maximum allowance of ten (10%) percent for overhead and profit, plus the Prime

Contractor's overhead and profit not to exceed five (5%) percent of the Subcontractor's cost.

7.2.7 The General Contractor shall furnish all necessary documentation to support the additional costs, including, but not limited to the following:

7.2.7.1 Copy of the Subcontractor's proposal.

7.2.7.2 Complete breakdown of all costs for labor and materials.

7.2.7.3 Complete breakdown of related costs.

7.2.7.4 Other information as may be requested by the Architect.

7.2.8 The overall cost of the Change Order shall be all inclusive and once accepted by the Owner, it shall be considered full and final.

7.2.9

7.3 CONSTRUCTION CHANGE DIRECTIVES add the following:

7.3.1 Delete the word "Construction Manager" and replace with "Architect".

7.3.4 Replace Paragraph 7.3.4 with the following: "If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in Section 7.1.5. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 and Section 7.2 shall be limited to the following:"

7.3.4.5 Replace Paragraph with the following: "Costs of supervision and field office personnel will not be considered unless demonstrated as directly attributable to the change."

7.3.5 Add prior to the end of the paragraph, "but shall nevertheless proceed with the Work under the Construction Change Directive."

7.3.6 Add the following to the end of the paragraph, "The Contractor's failure to comply with the Construction Change Directive shall constitute a material breach of contract and cause for termination by the Owner."

7.3.7 Add the following prior to the end of the paragraph, "and the provisions of Section 7.2.3 shall apply."

7.3.9 Add the following prior to the end of the paragraph, "or as otherwise permitted by the Contract Documents."

7.3.10 Delete the word "Construction Manager shall prepare" and replace with "Architect shall prepare".

7.3.11 If the Contractor claims that certain Work constitutes an addition, deletion, or change to the Work, the Contractor shall notify the Owner, Construction Manager and Architect at least fourteen (14) days before proceeding with such Work, or else any claim by the Contractor for any adjustment to the Contract Sum or the Contract Time on account thereon shall be deemed waived.

7.3.11.1 If the Contractor gives timely notice and the Owner directs the Contractor to proceed with such disputed Work as part of its Work or as a minor change in the

Work, the Contractor shall promptly proceed with such disputed Work, subject to later resolution in accord with the requirements of the Contract Documents.

7.3.11.2 In that event, the Contractor shall present, at the end of each day that the Contractor performed the disputed work, a summary of the day's costs attributable to the disputed work, including labor hours and material costs, for verification by the Owner and the Architect.

7.3.11.3 Only the material and labor as verified by the Construction Manager shall be used in computing any increase in costs for the purposes of the adjustment to the Contract Sum, should it later be determined that the Contractor is entitled to such adjustment.

7.3.11.4 Upon request, the Contractor shall provide to the Owner and Architect full supporting documentation for all costs claimed.

7.3.11.5 To the extent that the Contractor fails to submit such summary each day, its claim for an adjustment to the Contract Sum shall be deemed waived.

7.5 RIGHT TO AUDIT THE CONTRACTOR'S BOOKS AND RECORDS New Article:

7.5.1 The Owner shall have the right to appoint an auditor to audit and review the Contractor's financial books and records of account in connection with any claim by the Contractor, Change Order, or Construction Change Directive.

ARTICLE 8 - TIME

8.1 DEFINITIONS add the following:

8.1.5 <u>All time limits set forth in the Agreement are of the essence.</u> By executing the Agreement, the Contractor confirms that the contract time is a reasonable period for performing the Work. Work will commence within TEN (10) CALENDAR DAYS after issuance of written "Notice to Proceed" and be substantially completed in accordance with the Contract Documents and Contractors' Coordinated Construction Schedule for substantial completion of the entire Project in accordance with Section 011000 - Summary, Article 1.05 Phased Construction. All time limits stated in the contract are of the essence.

8.2 PROGRESS AND COMPLETION add the following:

8.2.1 At the end of the paragraph add the following: "The Contractor acknowledges and understands that failure by Contractor to complete the Work in accordance with the construction schedule, or in accordance with any of the milestones set forth within the construction schedule, will cause significant damages to the Owner."

8.2.3 At the end of the paragraph add the following: Contractor agrees to increase manpower, increase work hours, and to increase equipment necessary to maintain the Project Construction Schedule, and when also requested by the Architect and the Owner, and shall be without additional cost or charge to the Owner.

8.2.4 Work shall commence within ten (10) days of the issuance by Owner of a Notice to Proceed and shall proceed uninterrupted to Final Completion. The Contractor acknowledges and recognizes that the Owner is entitled to full and beneficial occupancy and use of all or part of the completed Work in accordance with the Milestone Dates set forth in other sections of the Contract Documents, as per approved Schedule, and that the Owner has made arrangements to discharge its public obligations based upon the Contractor's achieving Substantial Completion of all of the Work within the Contract Time. The Contractor further acknowledges and agrees that if

the Contractor fails to complete substantially or cause the Substantial Completion of any portion of the Work, as required by the Project Construction Schedule and/or within the Contract Time, the Owner will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, the Owner and the Contractor agree as set forth (below):

8.2.4.1 If the Contractor fails to achieve partial completion within the requirements of the Milestone Dates or the approved Schedule or to achieve Substantial Completion of all or part of the Work when and as required by the Project Construction Schedule, and/or within the Contract Time, the Owner shall be entitled to retain or recover from the Contractor and its Surety, as liquidated damages and not as a penalty, the amounts indicated in other sections of the Contract Documents and commencing upon the first day following expiration of the Project Construction Schedule and/or the Contract Time, as the case may be, and continuing until the actual Date of Substantial Completion.

8.2.5 Adherence to Schedule

8.2.5.1 The Owner reserves the right to withhold monthly progress payments if the Contractor is behind schedule, unless the Contractor documents, in writing, any delays that are not the fault of the Contractor and to which the Owner and Architect agree.

8.2.6 The Construction Manager in coordination with the Contractor will set work hours. The Contractor will be required to work nights, weekends, or holidays as necessary to complete the work in accordance with the Schedule or in coordination with School Activities. Standard work hours for this project may be affected by local Noise Ordinance. Contractor shall be responsible to adhere to the Noise Ordinance for night, weekend and holiday work. Under no circumstances will the Contractor begin or continue with work that is adversely impacting School activity or operations. Work impacting school operations is required to be performed during non-school operating hours, as determined by the OwnerConstruction Manager, at no additional cost to the Owner. All utility shut downs, interruptions, work in or adjacent to existing building will be coordinated through Construction Manager and may have to be performed during hours when the School is not in operation. The Contractor must provide a detailed schedule and advance notice for any utility shut downs or disruptive activities. Costs associated with rescheduling or accommodating these disruptions shall be borne by the Contractor unless otherwise agreed upon in writing. All cutting, hammering, or other activity that is noisy, produces smoke or fumes, or is otherwise disruptive to the School may have to be done during hours when the School is not in operation. The Construction Manager will oversee and enforce these guidelines, ensuring that all work aligns with the agreed schedule and does not interfere with school functions.

8.2.7 Project Completion – Completion of all work and receipt of temporary certificate of occupancy for this project is asshall adhere to the requirements detailed in the project manual. This includes the successful completion of all phases of work as outlined in the Contract Documents. Specific phasing and intermediate milestones will be established during CPM schedule development process, i.e. anchor bolt setting, structural steel delivery/erection/sequencing, building enclosure, overhead rough-in and above ceiling inspections, phased completion of various areas etc. Each milestone will be documented in the CPM schedule, and progress will be tracked against these milestones. The Contractor is required to meet these milestones as specified and to coordinate with the Construction Manager to address any potential delays or issues.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 Delete this paragraph and replace with the following:

If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or (2) by changes ordered in the Work; or (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with section 15.1.6.2, or other causes beyond the Contractor's control; or (4) by delay authorized by the Owner pending litigation or mediation; or (5) by other causes that the Contractor asserts, and the Architect determines justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine and the Owner approve.

8.3.2 Delete this paragraph and substitute the following:

Claims relating to time shall be made in accordance with applicable provisions of Article 15. An extension of time will only be granted if the delays result in a delay to the Contract Completion Date. Incidental delays that consume float shall not form the basis for an extension of time. For an extension of time to be considered, Construction Manager may require a time impact analysis be performed to validate any time extentions.

8.3.3 Delete this paragraph and substitute the following:

In accordance with N.J.S.A. 18A:18A-41, in no event shall the Contractor be entitled to collect damages from the Owner or Architect as a result of any Project delay not solely caused by the Owner's negligence, bad faith, active interference, tortuous conduct, or unforeseen circumstances uncontemplated by the parties, which were not otherwise foreseeable, as more particularly described in Article 8.4.4. The Contractor is aware that its ability to complete its portion of the Project could be hindered or delayed by the actions or inactions of other Contractors on the Project or other causes not attributable to the Owner's negligence, bad faith, active interference or tortuous conduct or unforeseen circumstances uncontemplated by the parties, which were not otherwise foreseeable, as more particularly described in Article 8.4.4. The Contractor's sole remedy for delays by the Owner's negligence, bad faith, active interference, tortuous conduct or unforeseen circumstances uncontemplated by the parties, which were not otherwise foreseeable, as more particularly described in Article 8.4.4 shall be the actual out of pocket expenses incurred by the Contractor directly attributable to the delays caused solely by the Owner or unforeseen circumstances uncontemplated by the parties, which were not otherwise foreseeable, as more particularly described in Article 8.4.4. The Contractor's sole remedy for delays caused by any reason other than the Owner's negligence, bad faith, active interference, tortuous conduct or unforeseen circumstances uncontemplated by the parties, which were not otherwise foreseeable, as more particularly described in Article 8.4.4 shall be an extension of time to complete the Project.

8.3.4 To the fullest extent permitted by law, no payment, compensation or adjustment of any kind (other than the extensions of time provided for in Paragraph 8.3.1) shall be made to the Contractor by the Owner or Architect for direct, indirect, or impact damages, including but not limited to costs of acceleration or loss of revenue, overhead or profit, arising because of hindrances or delays being avoidable or unavoidable, reasonable or unreasonable, other than delays adjudicated as attributable to solely the Owner's negligence, bad faith, active interference, or tortuous conduct or unforeseen circumstances uncontemplated by the parties, which were not otherwise

foreseeable, as more particularly described in Article 8.4.4. The Contractor agrees that he will make no claim against the Owner or Architect for payment, compensation, damages, mitigation of liquidated damages, or adjustment of any kind for such hindrances or delays, and will accept such extensions of time in full satisfaction for any and all alleged claims against the Owner and Architect for any and all such hindrances or delays in all cases where the Owner's negligence, bad faith, active interference, or tortuous conduct or unforeseen circumstances uncontemplated by the parties, which were not otherwise foreseeable, as more particularly described in Article 8.4.4, is not the sole cause of the delay. No additional payment will be made for reason of extension of time to any contractor in the completion of work. No claims for extra cost by any contractor will be granted by reason of the construction not being completed within the contract time.

8.3.5 The provisions of this Article shall not be so interpreted or construed as to preclude or prevent the Contractor from making and prosecuting any claim against any separate Contractor engaged by the Owner for damages alleged to have been caused or occasioned by any such separate Contractor. Any delay attributable to another contractor shall be brought by the contractor as a direct action against the delaying contractor.

8.3.6 Any delay attributable to lack of coordination or cooperation by and between the Contractor or its Subcontractors, if any, will not be recognized by the Owner as the basis for any claim for increase in any Contract Sum, but shall be settled as provided in the General and Supplementary Conditions.

8.3.7 An extension of time shall be allowed equal to the total period of any delay caused by injunction or other legal proceedings, insofar as such proceedings prevent the Contractor from proceeding with the work, but no extension shall be allowed unless such legal proceedings shall be diligently prosecuted by the Contractor and, provided further that, in no case shall such delay be deemed to begin until the Contractor shall have given written notice to the Owner of the injunction or other action of delay and shall have delivered to the Owner a copy of the injunction or other orders and the papers upon which the time shall have been granted.

8.3.8 The Owner may suspend the whole or any part of the work, if it shall deem it for the best interest of the Owner to do so, without compensation to the Contractor for such suspension other than extending the time for completion of the work as much as it may have been delayed by such suspension. During such suspension, all materials delivered upon but not placed in the work, shall be neatly piled by the Contractor so as not to obstruct public travel or shall be removed from the line of work at the direction of the Owner and, unless the materials be moved by the Contractor upon such direction, the materials shall be removed by the Owner and expense thereof will be charged to the Contractor.

8.3.9 Nothing contained herein shall preclude the Owner from recovering damages for delays pursuant to the terms of the Contract Documents, except as specifically provided herein.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 CONTRACT SUM add the following:

9.1.1.1 The Contract sum shall include the cost of all work, labor, materials, equipment, transportation and all other things necessary to perform and complete the Project in a manner acceptable to the Owner and within the required time; all incidental expenses in connection therewith; all costs on account of loss by damage of

destruction of the Work, to the extent that the Owner and Contractor do not recover the cost of such loss from insurance carrier; and any additional expenses for unforeseen difficulties encountered, settlement of damages and replacement of defective work and materials.

9.2 SCHEDULE OF VALUES Delete the paragraph and substitute the following:

9.2.1 Schedule of Values shall include cost of work at the/each Building and for the/each Project and shall include the Architect's Special Project Number. Schedule of Values shall include materials and installation and in accordance with each Specification Section as listed in the Specification Index, as shown on the Drawings and/or as directed by the Architect. Contractor shall include separate line items for the following:

.1 Bonds,

.2 Insurance,

.3 Mobilization,

.4 General Conditions,

.5 Contractor's Construction Schedule and monthly updates

.6 Submittals (Product Data, Samples, and Shop Drawings),

.7 As-Built Drawings and similar requirements as per Section for Closeout Documents,

.8 1% for Punch List items and Closeout Documents per Section for Closeout Documents,

.9 Final Cleaning

.10 Monthly Value for Clean-up

.11 Safety

.12 Winter Protection

.13 Temp Egress

.14 Other items, as directed by the Architect or Constructon Manager.

9.2.1.2 Contractor shall enclose with the Schedule of Values, copies of invoices and/or cancelled checks from Bonding and Insurance Agents for the required cost of the coverage for the project being billed.

9.2.1.3 Contractor shall break out labor and material for specific line items but Owner reserves the right to pay for actual cost of stored material, verified by invoice.

9.2.2 Claims for escalation from prices submitted at the time of bid for work included in the original scope of work at the time of bid, including alternate bid, will be prohibited.

9.3 APPLICATIONS FOR PAYMENT add the following:

9.3.1 Add the following at the end of the paragraph

Payroll Certification for all employees of all of the workers on the project shall be submitted.

9.3.1.3 Applications for payment shall be made monthly based upon labor and materials completed and materials suitably stored on site. Two-Percent (2%) of the amount due on each partial payment shall be withheld by the Owner when the outstanding balance of the Contract exceeds $500,000.00, and Five percent (5%) of

the amount due on each partial payment shall be held by the Owner when the outstanding balance of the contract is $500,000.00 or less in accordance with N.J.S.A.18A:18A-40.3. Requisitions for all payments will be made on AIA Document G702 Application and Certificate for Payment, in addition to the Owner's Invoice Forms as required. Contractor will be required to submit an itemized, detailed cost breakdown showing quantities, unit costs, and totals to the Architect within twenty (20) days after Notice to Proceed. Form to be in conformance with Architect's requirements.

9.3.1.4 Submit to Construction Manager and Architect a schedule of values for approval.

9.3.1.5 Prior to the end of each pay period, contractor will submit a rough draft of their payment application for review and approval of the Architect and Construction Manager.

9.3.1.6 Upon approval of the rough draft by Construction Manager and Architect, Contractor will submit their payment application to the Architect for approval along with their certified payrolls and Affirm Action monthly manning reports. Payments will not be processed without submission of certified payrolls and monthly manning reports.

9.3.2.1 The following procedures must be followed in order to obtain payment.

.1 A certificate of insurance naming the Owner as loss beneficiary for the full dollar amount representing the materials stored.

.2 A Consent of Surety in the amount being requisitioned, said Surety being the Bonding Company of the Prime Contractor.

.3 Materials to be stored in warehouse must be inspected by the Architect/Engineer/Construction Manager and the Contractor will not receive extra compensation for storage costs.

.4 Any time and travelling expenses for the Construction Manager to visit and inspect equipment stored will be borne by the Contractor making the off-site storage request.

.5 Payment invoices for materials stored off site shall be so noted.

.6 There will be no storage space available in the existing building(s). Space in new building(s) may be used for storage only if approved, in writing, by the Architect/Construction Manager and all Contractors having work in the area.

.7 The Contractor will be paid for storage materials no more than the actual or replacement value of the materials. The Contractor will furnish vendors price lists, priced inventories or other documentation to support claims for payment of materials stored on or off site. Representatives of the Owner shall have the right to make inspections of the off-site storage areas at any time.

9.3.3 Delete the paragraph and replace with the following:

The Contractor warrants and agrees that title to all Work and stored materials will pass to the Owner either by incorporation in the construction or upon receipt of payment therefore by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests, or encumbrances whatsoever, that the vesting of such title shall not impose any obligation on Owner or relieve Contractor of any of its obligations under the Contract, that the Contractor shall remain responsible for damages to or loss of the Work, whether completed or under construction, until responsibility for the Work has been accepted by Owner in the manner set forth in the Contract Documents, and that no Work covered by an Application for Payment will have been acquired by the Contractor, or by any other person performing Work at the site or furnishing materials

and equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

9.3.4 Contractor further warrants that upon submittal of an Application for Payment, all Subcontractors and Sub-Subcontractors who performed work for which certificates of payment have been previously issued and payments received from the owner have in fact been paid for such work.

.1 Contractor hereby waives any right which it may have to assert a mechanics' or other lien against the work, the project site, and any improvements thereon. Further, the Contractor shall cause a similar waiver to be included in all of its Subcontract and Sub-Subcontracts. Contractor shall also execute a separate waiver of liens if so requested by the Owner.

.2 Contractor shall defend, indemnify, and hold Owner, Architect, and COnstruction Manager harmless from and against any and all claims, actions and proceedings arising out of or related to any liens asserted against the work, the project site and any improvements thereon, or the payments due the Contractor under this agreement. As complete indemnification is intended, all costs and expenses, including reasonable attorney's fees, incurred by the Owner and Architect in enforcing this provision shall be reimbursed by the Contractor to the Owner.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 Delete the entire paragraph and substitute the following:

Provided the Prime Contractor has performed work in accordance with the provisions of its Contract with the Owner, the Architect will, after receipt of the Contractor’s Certified Application for Payment (not the preliminary pencil copy), either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Owner and Contractor in writing of the Architects reasons for withholding certification in whole or in part as provided in paragraph 9.5.1 of the General Conditions of the Contract for Construction. Provided the Contractor’s Certified Application for Payment (not the preliminary pencil copy) is received no less than 20 days prior to the next scheduled public meeting of the public entity’s governing body (the Board) the amount due may be approved and certified at the scheduled public meeting of the public entity’s governing body (the Board) to be paid during the entity’s (Stafford Township Board of Education) subsequent payment cycle, not to exceed 30 days. If an Application for Payment is received by the Owner and Architect after the 20-day period prior to the scheduled public meeting of the public entity’s governing body (the Board), the amount due may be approved and certified at the next subsequent scheduled public meeting of the public entity’s governing body (the Board) and subsequent payment cycle. A copy of the Board’s published schedule of meetings is available at the Board Offices. Payment is subject to all provisions of N.J.S.A 2A:30A-1 et seq., New Jersey Prompt Payment Act.

9.5 DECISIONS TO WITHHOLD CERTIFICATION add the following:

9.5.1.6 Delete the entire paragraph:

9.5.1.7 Delete the entire paragraph and substitute the following:

9.5.1.6 repeated failure to carry out the Work in accordance with the Contract Documents; or

9.5.1.7 failure to maintain the site in a safe and satisfactory manner in accordance with the Contract Documents and/or law as determined by the Architect.

9.5.1.8 Failure of the Contractor to maintain the scheduled progress or meet intermediate milestones.

9.5.1.9 Failure to submit certified payroll records for previous period.

9.5.1.10 Failure to submit waivers of mechanic's liens from all subcontractors and material suppliers for the previous period.

9.5.1.11 Failure of the Contractor to submit revised schedule updates

9.5.1.12 Failure of any Prime Contractor to provide timely input to the General Contractor for the specified construction schedule or required schedule updates.

9.5.1.13 Third party claims filed or reasonable evidence indicating probable filing of such claims including, but not limited to lien claims;

9.5.1.14 Failure to cooperate with Construction Manager relative to construction schedule, material storage, coordination with the School District, clean up or safety.

9.5.2 Delete and replace with, "When the Contractor disputes the Architect's decisions regarding a Certificate for Payment under Section 9.5.1, in whole or in part, the Contractor may submit a claim Claims relating to time shall be made in accordance with applicable provisions of Article 15. If the Owner disputes the Architect's decision it may make a claim in any manner permitted by this Agreement or applicable law.

9.5.3.1 If the Owner is entitled to any reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Unless otherwise stated in the Contract Documents, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any expenses due to the Contractor's acts and omissions, the Contractor, including but not limited to additional services of the Architect and reasonable attorney's fees, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any payment due the Contractor, or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

9.5.4.1 If the Contractor disputes any determination by the Architect with regard to any Certificate of Payment, the Contractor nevertheless expeditiously shall continue to prosecute the Work.

9.5.4.2 The failure of the Owner to retain any percentage payable to the Contractor or any change in or variation of the time, method or condition of payments to the Contractor shall not release or discharge to any extent whatsoever, the Surety upon any bond given by the Contractor hereunder. The Owner shall have the right, but not the duty, to disregard any schedule of items and costs that the Contractor may have furnished and defer or withhold in whole or in part any payment if it appears to the Owner, in its sole discretion, that the balance available in the Contract Sum as adjusted and less retained percentages, may be insufficient to complete the Work.

9.5.4.3 Notwithstanding any provision of any law to the contrary, the Contractor agrees that the time and conditions for payment under the Contract for Construction shall be as stated in the Contract for Construction and in the Contract Documents. The Contractor specifically agrees that the Owner's failure to give, or timely give notice of:

9.5.4.3.1 any error in an invoice or application for payment submitted by the Contractor for payment; or

9.5.4.3.2 any deficiency or non-compliance with the Contract Documents with respect to any Work for which payment is requested, shall not waive or limit any of the Owner's rights or defenses under the Contract for Construction and the Contract Documents, or require the Owner to make a payment in advance of the time, or in an amount greater than, as provided by the Contract for Construction.

9.5.4.4 The Contractor shall make payments to its Subcontractors in accordance with the provisions of any applicable law governing the time, conditions, or requirements for payment to its Subcontractors, and shall comply with the provisions of any such law.

9.5.4.4.1 The Contractor will pay its Subcontractors no later than fifteen (15) days after receipt of a payment from the Owner which includes payment for the Work of any such Subcontractors.

9.5.4.4.2 The Contractor shall require its Subcontractors, by appropriate agreement, to pay their Subcontractors and Suppliers (of any tier) within the same time.

9.5.4.4.3 The Contractor and its Surety shall indemnify and defend the Owner any loss, cost, expenses, or damages, including Attorney's fees arising from or relating to the Contractor's failure to comply with such law.

9.5.4.4.4 The Contractor may be required to submit affidavit and or release of liens from any subcontractor or material supplier as evidence

9.6 PROGRESS PAYMENTS PAYMENT

9.6.1 Add the following at the end of the paragraph

Regardless of Certification by the Architect, the Owner may refuse to make payment based on any default by the Contractor including, but not limited to those defaults set forth in Subparagraphs 9.5.1 through 9.5.1.9. The Owner shall not be deemed in default by reason of withholding payment while any of such defaults by the Contractor remain uncured regardless of whether or not the Architect signed the payment application.

Delete paragraph 9.6.2 and substitute the following:

9.6.2 The Contractor shall pay each Subcontractor, no later than ten days after receipt of payment from the Owner the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.7 FAILURE OF PAYMENT Delete the entire paragraph and substitute the following:

9.7 If the Architect does not issue an approved Certificate for Payment, through no fault of the Contractor, within 14 days after receipt of the Contractor's Application for Payment, or if the Owner does not for reasons other than a default of the Contract, including but not limited to those defaults set forth in Subparagraphs 9.5.1.1 through 9.5.1.13 pay the Contractor the certified and approved amount within 14 days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

9.7.1 If the Owner is entitled to any reimbursement or payment from the Contractor under or pursuant to the Contract Documents, such payment shall be made promptly upon demand by the Owner. Unless otherwise stated in the Contract Documents, if Contractor fails to promptly make any payment due the Owner, or the Owner incurs any expenses to cure any default of the Contractor, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any payment due the Contractor, or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

9.8 SUBSTANTIAL COMPLETION add the following:

9.8.1.1 Owner’s beneficial occupancy must be approved by all governing authorities having jurisdiction and by issuance of a temporary or permanent “Certificate of Occupancy” and in accordance with all applicable Codes and Regulations.

9.8.1.2 Substantial Completion occurs when each of the following conditions precedent has occurred:

9.8.1.2.1 the Work has been sufficiently completed in accordance with Contract Documents so that the Owner obtains beneficial use and occupancy of the Work;

9.8.1.2.2 Certificates of Occupancy and any other permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the beneficial occupancy of the Project have been received by the Owner; and

9.8.1.2.3 the Architect has issued a certificate of Substantial Completion. The date of Substantial Completion is the date certified by the Architect in accord with the Contract Documents and shall follow the Contractor’s Notification for Substantial Completion inspection and the Architect’s inspection of the Project.

9.8.2 Delete the entire paragraph and substitute the following:

Unless otherwise indicated in the Contract Documents, no later than thirty (30) calendar days, prior to the date scheduled for Substantial Completion, the Contractor shall prepare and submit to the Architect and Owner, a comprehensive punch list of items remaining to be completed or corrected

9.8.2.1 The Architect and/or Owner may add additional items requiring completion or correction at any time upon discovery of such deficient work product.

9.8.2.2 The Contractor shall immediately proceed with the Work required by the punch list and shall complete and correct items on or added thereto by the date scheduled for Substantial Completion.

9.8.2.3 When the Contractor determines that the Work has reached Substantial Completion, or when the Owner, Architect so determine and direct the Contractor to do so, the Contractor shall request the Architect’s final inspection to determine Substantial Completion. In addition, the Contractor shall prepare and submit to the Architect and Owner its final Application for Payment submitted in compliance with the requirements of the Contract Documents and shall thoroughly re-inspect the Work; prepare and submit to the Architect and Owner a comprehensive final punch list of any and all items remaining to be completed or corrected (whether or not included on any previous punch list).

9.8.2.3.1 Within fourteen (14) calendar days after receipt of the Contractor's request and final punch list, the Architect will inspect the Work to determine whether Substantial Completion has occurred.

9.8.2.3.2 If the Architect determines that Substantial Completion has not occurred, it shall advise the Contractor and the Owner of the reasons for their determination and the Contractor shall continue with the Work and request another inspection for Substantial Completion and submit another final punch list after the concerns of the Architect have been addressed.

9.8.2.3.2.1 The fees and expenses incurred by the Owner for services of the Architect and or Construction Manager as a result of any additional re-inspections of the Work, shall be paid by the Contractor or its Surety.

9.8.2.3.3 When the Architect determines after an inspection under this Section that Substantial Completion has occurred the Architect shall:

9.8.2.3.3.1 add to the Contractor's final punch list any additional items which they discover which also need to be completed or corrected;

9.8.2.3.3.2 determine and certify the amount required to complete each item on the punch list, basing such determination upon the amount the Owner would have to expend or incur to complete each item if the Contractor failed to do so; and

9.8.2.3.3.3 prepare and issue a certificate of Substantial Completion, which shall establish the date of Substantial Completion.

9.8.2.3.3.4 The Contractor shall proceed promptly to complete and correct items on the final punch list within thirty (30) calendar days of the date of Substantial Completion or prior date established for Final Completion in other sections of the Contract Documents.

9.8.2.3.3.5 The failure of items to appear on any punch list shall not constitute an acceptance of any Work not in accord with the Contract Documents nor relieve the Contractor or its Surety of responsibility with respect thereto.

9.8.2.3.3.6 Warranties required by the Contract Documents shall commence on the approved date of Substantial Completion of the Work for the entire project unless otherwise provided in the Certificate of Substantial Completion.

9.8.2.3.3.7 The Architect shall submit the Certificate of Substantial Completion to the Owner and Contractor. If not completed within this time, the Owner may proceed to finish the Work as otherwise provided in this Agreement.

9.8.3 Delete the entire paragraph and substitute the following:

Upon receipt of the Contractor's request, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses additional items, whether or not included on the Contractor's list, which are not sufficiently completed or corrected in accordance with the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, promptly complete or correct such items. All items must be corrected by the Contractor within fourteen (14) days after receipt of the list from the Architect or within an acceptable time frame established by the Contractor and Architect and approved by the Architect. Upon completion of those items the Contractor shall request, in writing, a re-inspection of the Work. This re-inspection shall commence within fourteen (14) days after receipt of notice. If upon the re-inspection, the Architect finds that the previous items, or new items, do not conform to

the Construction Documents, a revised list shall be provided to the Contractor within seven (7) days. This sequence of actions shall take place until all items conform to the Contract Documents. The Contractor shall be liable to reimburse the Owner, by means of a Change Order, for all costs and fees of the Architect, Engineers, and all professionals associated with re-inspections of Work beyond one (1) initial inspection and one (1) re-inspection of the Work.

9.8.3.1 If during the sequences of inspection and correction of Work, the Contractor defaults or neglects to carry out the correction of Work in accordance with the time frames established in 9.8.2 or in accordance the approved schedule of correction, the Contractor shall be considered in default and the Owner may exercise all rights under these Contract Documents. This shall also include Article 2.4 – Owner's Right To Carry Out The Work.

9.8.4.1 The Architect's Certificate of Substantial Completion shall be subject to the Owner's final approval.

9.8.6 In no case shall the time established for the completion and correction of items on the list extend beyond thirty (30) days after Certification of Substantial Completion, except for delay beyond the Contractor's reasonable control. The Contractor shall pay for all architectural and consultant services incurred thereafter due to the failure of Contractor to complete and / or correct the Work on the list or to submit documentation and items required for final completion and final payment. Payment for additional architectural and consultant services shall be deducted from the Contract amount.

9.9 PARTIAL OCCUPANCY OR USE add the following:

9.9.3 Delete the entire paragraph and substitute the following:

Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents, nor does it waive the Owner's right to liquidated or actual damages described in Article 8.4.5 because Final Acceptance of the Work shall be for the entire work only and not in part.

9.9.4 As portions of the Project are completed and occupied, the Contractor shall ensure the continuing construction activity will not unreasonably interfere with the use, occupancy and quiet enjoyment of the completed portions thereof.

9.9.4.1 The Contractor agrees to coordinate the Work with the Architect and the Owner in order to minimize disturbance to occupied portions of the structure.

9.9.4.2 In the event performances or scheduled events by the Owner are conducted in close proximity to the Work in progress, the Contractor agrees to cease all Work which may disturb the Owner's occupants at the site.

9.10 FINAL COMPLETION AND FINAL PAYMENT add the following:

9.10.2 Add the following to the end of the paragraph

and (7) evidence of compliance with all requirements of the Contract Documents: notices, certificates, affidavits, other requirements to complete obligations under the Contract Documents: including but not limited to (a) instruction of Owner's representatives in the operation of mechanical, electrical, plumbing and other systems, (b) delivery of keys to Owner with keying schedule: master, sub-master and special keys, (c) delivery to Architect of Contractor's General Warranty (as described in Paragraph 3.5) and each written warranty and assignment thereof prepared in

duplicate, certificates of inspections, and bonds for Architect's review and delivery to Owner, (d) delivery to Architect a printed or typewritten operating, servicing, maintenance and cleaning instructions for all Work; parts lists and special tools for mechanical and electrical Work, in approval form, (e) delivery to the Architect of specified Project record documents and (f) delivery to Owner of a Final Waiver of Liens (AIA Document G-706 or other form satisfactory to Owner), covering all Work including that of all Subcontractors, vendors, labor, materials and services, executed by an authorized officer and duly notarized. In addition to the foregoing, all other submissions required by other articles and paragraphs of the Specifications including final construction schedule shall be submitted to the Architect before approval of final payment.

9.10.3 Add the following to the end of the paragraph

All warranties and guarantees required pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Owner as part of the final application for payment. The final Certificate for Payment will not be issued by the Architect until all warranties and guarantees have been received and accepted by the Owner.

9.10.3.1 If more than one inspection for Final Completion is required, the Contractor will be billed and responsible for the professional fees and services of the Architect.

9.10.3.2 Following Substantial Completion, in the event the Contractor or their Subcontractor fails to complete the list of items of the Work instructed by the Architect to be corrected or completed within thirty (30) days after the date of receipt of Certificate of Substantial Completion, the Owner may:

9.10.3.2.1 exercise any available remedies to correct or complete deficient work or retain a third party to correct or complete such work at the cost of the defaulting Contractor; and

9.10.3.2.2 retain and deduct from any payments or retention otherwise due to the defaulting Contractor any fees and expenses for services required to be provided by the Architect more than thirty (30) days after the Date of Substantial Completion.

9.10.4 Delete these sub paragraphs and substitute the following:

.2 failure of the Work to comply with the requirements of the Contract Documents;

.3 terms of special warranties required by the Contract Documents; or

.4 insufficiency of or failure to provide requisite close-out documents.

9.10.6 Prior to final payment, Contractor will submit, but not limited to the following:

.1 Supplemental Attachment for Accord Certificate of Insurance - AIA Document G715.

.2 Affidavit of Payment of Debts and Claims - AIA Document G706.

.3 Affidavit of Release of Liens - AIA Document G706A.

.4 Consent of Surety to Final Payment - AIA Document G707.

.5 Certification of Paid Wages in accordance with New Jersey Prevailing Wage Act.

.6 Maintenance Bond in form as bound herein.

.7 Contractor's "As-Built" Drawings on CD.

.8 Maintenance Manuals and Instructions.

.9 Special written guarantees and warranties in addition to the guarantee covered by Maintenance Bond. Guarantee shall be signed and sealed by Officer of the Contracting Firm and shall be notarized.

.10 Fully Executed AIA Substantial Completion Form G-704.

9.10.7 Upon completion of the punch list and all other required scope of work have been completed in accordance with the Contract Documents, the Contractor shall submit a written request certifying that the project is ready for final inspection by the Architect. A copy of the “Ready For Closeout” form is included in 009000 – Project Forms.

9.11 LIQUIDATED DAMAGES (new section)

9.11.1 Actual damages for delay in the time of completion are impossible to determine. Accordingly, each Contractor shall be liable for, and shall pay to the Owner as fixed, agreed and liquidated damages, the sum or sums indicated for each calendar day (Sundays and holidays included) which the actual time of Substantial Completion shall be delayed beyond the time of completion indicated in the Form of Agreement.

9.11.2 The Owner shall have the right to deduct the total amount of any fixed, agreed and liquidated damages for which the Contractor may be liable from any moneys otherwise due to the Contractor under the Contract, including any retainage held by the Owner.

9.11.3 The surety upon the Performance Bond furnished by the Contractor shall be liable for any fixed, agreed and liquidated damages for which the Contractor may be liable under this paragraph 9.11, to the extent that the Contractor shall not make settlement therefore with the Owner.

9.11.4 The Contractor and the Contractor’s Surety shall be liable for and shall pay the Owner the sums hereinafter stipulated as liquidated damages for failure to provide substantially complete Work within time limits indicated in the Form of Agreement and for failure to complete or correct all items on the Comprehensive List of Items to be Completed or Corrected ("Punch List") within the time limit indicated below.

9.11.5 Liquidated damages for failure to achieve Substantial Completion of the entire Work or of any Phase shall be assessed at a rate of $2,500 per calendar day of delay.

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

Delete the subparagraph and add the following:

10.1.1 The Contractor is required to establish, maintain, and implement effective programs to ensure compliance with all OSHA regulations, in addition to the Hazard Communication Standard, and advise the Construction Manager regarding the location, on site, where the Contractor’s MSDS sheets are kept. The Contractor will provide the Architect (for informational purposes only) with all information regarding any precautionary measures that the relative Contractor must employ to protect employees, any foreseeable emergency situations, and the relative Contractor’s labeling system used at the work site. The Contractor is also required to provide this information to the Owner and any subcontractors operating at the site, and to secure similar information from the other contractors or subcontractors operating at the site, for the protection of all employees.

10.1.2 Neither the Owner, nor the Architect will be responsible for providing, maintaining, or enforcing a safe working place for the Contractors, their Subcontractors or their employees, or any individual responsible to them for the work.

10.1.3 Neither the professional activities of the Architect, nor the presence of the Architect or the Architect's employees and sub-consultants at a construction site, shall relieve the Contractor and any other entity of their obligations, duties, and responsibilities including, but not limited to, construction means, methods, sequences, techniques, or procedures necessary for performing, superintending, or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Architect and Architect's personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for job site safety, and warrants that this intent shall be made evident in the Owner's agreement with the Contractor. The Owner, the Construction Manager, the Architect, and the Architect's consultants shall be defendant and indemnified and shall be made additional insured under the Contractor's general liability insurance policy.

10.1.4 The Contractor shall enforce strict discipline and good order at all times among Contractor's employees and all subcontractors. Contractor's employees and subcontractors shall dress in clothing appropriate to the work they perform. Contractor shall not engage any employee not skilled in a task assigned. All employees assigned to the Work by Contractor shall perform in the best manner and shall cooperate fully with the Owner and all other representatives of the Owner.

10.1.5 Smoking on the Owner's Property/Project Limits shall be prohibited. Contractor's employees shall avoid communications with students or teachers except to the extent necessary to implement safety measures.

10.1.6 At no time will the Contractor be permitted to work in any manner above occupied areas.

10.1.7 Contractor understands that the Project is an educational facility which may be fully or partially occupied and utilized by teachers and students. The Contractor shall take into consideration that the students utilizing or attending the educational facility are susceptible to the hazards of attractive nuisance or other hazards present on construction sites and shall take any and all necessary precautions.

10.1.8 It is absolutely prohibited for any worker to act in any manner which would be deemed injurious to the students or faculty or inappropriate within the school facility or setting. At the request of the Owner, which shall only be made for cause, the Contractor shall remove any employee from the Work, Project and site. No alcoholic beverages or other prohibited substances shall be permitted or consumed on school property.

10.1.9 CRIMINAL BACKGROUND CHECKS - The Contractor shall provide proof to the Owner that each worker assigned to a project involving contact with children has had a criminal history background check, and that said check indicates that no criminal history record information exists on file in either the Identification Division of the Federal Bureau of Investigation or the State Bureau of Identification which would disqualify said employee from employment pursuant to N.J.S.A. 18A:6-7.1 et.seq. Failure to provide proof of a criminal history background check for any employee at a contract school location will be deemed a breach of contract by the Contractor. If it is discovered during the course of the contract that either: (a) an employee with disqualifying criminal history record information on file or (b) any employee who has not had a criminal history background check is working at a contract school location, said employee is to be immediately removed by the

Contractor. Failure to immediately remove said employee either upon notification by the District or discovery by the Contractor shall constitute a material breach of contract. Proof of clearance by the Department of Education or a temporary waiver pending receipt of qualification to work from the Department of Education shall provide proof to the Owner prior to assignment and commencement of work of each employee.

10.1.10 Pursuant to N.J.S.A. 18A:37-16, all contracted service providers, defined as any organization that is a party to a contract or agreement for services with the Board, and all employees of contracted service providers are required to comply with the provisions of the District's anti-bullying policy. Contracted service providers and their employees shall verbally report any act of harassment, intimidation or bullying of a student on the same day on which the act was witnessed, or on the same day on which reliable information that a student has been subject to harassment, intimidation or bullying was received, and shall report the same in writing within two (2) school days. All verbal and written reports of harassment, intimidation or bullying of a student shall be made to the school principal or to any school administrator or safe schools resource officer.

Reports may be made anonymously in accordance with the reporting procedure as set forth in the anti-bullying policy. The District shall provide to all contracted service providers and their employees a copy of the District's anti-bullying policy and information regarding the policy.

10.1.11 The Contractor and each subcontractor must fully comply with the job safety requirements in addition to all Federal, State and Local safety guidelines. All cost associated with complying with all safety requirements shall be included in each Contractor's base bid.

10.1.12 The Contractor will serve as the overall Project Safety Coordinator and shall be responsible for all issues of safety and protection. Each Subcontractor shall also designate a safety person at the job site from NTP to contract completion. The designated safety person shall be responsible for the safety of their work and for their workers and to make continuous inspections for all safety issues relating to his work. The Owner and their representatives, including, but not limited to the Architect and Construction Manager are not responsible for safety on this project but will endeavor to promote safety. Each Contractor must comply with job Safety Requirements in addition to OSHA and local agency requirements. Failure to comply with safety issues will be grounds for withholding of payments.

10.1.13 Contractor will comply with all reasonable request of the Owner and Construction Manager with respect to additional security and protections required for work interfacing with Facility Operations. Safety is of utmost importance on this project and all issues relative to safety and protection of the Facility, Staff and Occupants will be treated as emergency needs and will not be subject to the 7 day notice requirements of Article 14.

10.1.13.1 Contractor to provide, maintain, relocate, and remove in coordination with Construction Manager, a 6' high minimum chain link, perimeter security fence. Fence will surround the building and proposed parking areas and will have signage attached at 100' intervals advising "Construction Area – Please Keep Out". CONTRACTOR to be responsible for opening and securing site each day

10.1.13.2 Adequate protection will be installed around the entire area of any and all earthwork, trenches, excavations, etc. and will be maintained until the work is complete.

10.1.13.3 This is a hard hat job. Identifying hard hats shall be worn at all times.

10.1.13.4 Hot work permits will be issued by foreman for all activities involving open flame, Construction Manager will provide copy of Hot Work Permit Forms.

10.1.14 The proper execution of the required safety provisions is directly related to the general condition safety line item on the schedule of values. The failure to provide a competent person on site to properly identify and take immediate corrective action may result in deductions to the general condition safety line item of the schedule of values.

10.1.15 The Contractor shall be responsible for the immediate investigation and resolution of all safety and environmental complaints/issues generated by Contractor employees, Owners, Owner's representatives or members of the public.

10.1.16 Contractor shall maintain all egress routes throughout building, Contractor shall post exit signs as coordinated with Construction Manager. Contractor shall provide wall hung fire extinguishers throughout building as deemed necessary by Construction Manager and fire officials.

10.1.17 Contractor's and Subcontractors's safety representative shall perform a daily safety inspection walk through to ensure that all requirements of the OSHA Standards, Fire Protection Standards and Safe Work Practices are being complied with and/or corrected. The responsibility of the Contractor is to provide a safe and healthy work environment for construction personnel, Owner's personnel and representative, and the public.

10.1.18 Upon written receipt of safety concerns and/or issues, the applicable Contractor shall respond in writing addressing how the safety concerns or issues were resolved. The Construction Manager shall be copied on all safety-related correspondence.

10.1.19 Contractor and Subcontractor's response and compliance with correction of deficiencies noted in the safety concerns notice issued by the Authority having jurisdiction is mandatory. Failure to comply will be grounds for withholding of progress payments until the conditions are acceptable to O.S.H.A or Authority having local jurisdiction.

10.1.20 The Contractor shall cooperate and submit to Construction Manager a copy of all licenses (welding, power-nailer, asbestos, etc.) as required by applicable agencies.

10.1.21 Each contractor shall have all required personal protective equipment and materials available for and used by each employee as required by Federal, State and local guidelines.

10.1.22 Each contractor shall supply proper equipment and crew sizes as necessary to safely complete the work.

10.1.23 Each contractor should provide documented safety training for each of their employees and subcontractor's employees no later than the first day they arrive on site. The training shall be documented and signed by the trainer and employee. A copy of all safety-training documents is to be provided to Construction Manager for the project files and updated as manpower loading increases.

10.1.24 The Contractor shall supply (2) two O.S.H.A. approved means of access/egress to each floor and roof for the course of the entire project for use by all applicable parties. The Contractor to erect and maintain OSHA approved pedestrian walking bridges, for emergency access/egress and as necessary to protect personnel from overhead work.

10.1.25 The Contractor shall be responsible for providing and maintaining all temporary emergency egress routes. The Contractor shall obtain the approval of the Building and Fire Departments for all temporary emergency egress routes. Contractor to provide for fire separation walls between occupied areas and work areas as required by local officials.

10.1.26 Contractor shall provide, relocate and/or maintain barricades, signage, provide flagmen, etc. as necessary to ensure public safety and safe egress. The Contractor to provide, maintain, relocate and remove in coordination with Construction Manager the perimeter security fence.

10.1.27 Notify Construction Manager immediately upon arrival of O.S.H.A. to the site.

10.1.28 All contractors shall submit to Construction Manager all MSDS sheets and shall cooperate in the posting of all required notifications relative to the use of hazardous substances on the property.

10.1.29 Each Contractor, subcontractor, vendor, etc. will enforce a full time no smoking or alcohol use policy for all employees during the entire course of the project. Any worker found violating these restrictions, or being belligerent, will be subject to removal from the site at the sole discretion of Construction Manager

10.1.30 The Contractor shall be responsible to secure the site at the end of each workday by an effective means and maintain until all parties determine no longer required.

10.1.31 For the safety of occupants, staff, and the public, the steel erection must be scheduled and coordinated with the owner and Construction Manager Construction Management. Swinging of steel and crane boom over occupied space will not be allowed. Steel contractor shall provide adequate barricades and fencing around his crane and steel at all times.

10.1.32 Each Contractor and all of their subcontractors must submit an acceptable O.S.H.A. compliant site specific written safety plan to Construction Manager for the project files within (14) days from the notice to proceed or prior to mobilizing on site, whichever comes first. The written safety plan shall include (as applicable to their work) but is not limited to the following:

10.1.32.1 Scaffold erection plan, including a log of daily inspections.

10.1.32.2 Full time fall protection plan for exposures over 6’-0”.

10.1.32.3 Job site signage plan (Perimeter fence warning signs posted 50’-0” o/c).

10.1.32.4 First aid and CPR provisions.

10.1.32.5 O.S.H.A. 200 log and a Job Safety and Health Protection poster.

10.1.32.6 Daily clean up.

10.1.32.7 Hazard Communication Program with MSDS logged and maintained.

10.1.32.8 Daily diary of work, issues, and incidents, etc.

10.1.32.9 Sheeting, shoring and excavation protection plan.

10.1.32.10 GFI safety program.

10.1.32.11 Hazardous Energy Control lock out tag out program.

10.1.32.12 Required safety clothes; eye & ear protection, respirators, boots, belts, gloves, etc. as appropriate to their work requirement.

10.1.32.13 Fire Extinguishers.

10.1.32.14 Removable guard rail protection at material loading areas, 200 lb force minimum requirement.

10.1.32.15 All stairs and platforms must have railings, 200 lb force minimum requirement. Stair pains and landings must be filled prior to their use.

10.1.32.16 Daily inspection of tools and equipment; verify safety devises are operational.

10.1.32.17 Ladder usage plan.

10.1.32.18 Weekly tool box meetings, documented and signed by each employee.

10.1.32.19 Temporary heat procedures.

10.1.33 Contractor shall maintain and submit a complete copy of the written safety plan, logs, diaries, plans and programs on site for the Construction Manager.

10.1.34 The speed limit within the project property is 5 MPH. Contractor employees operating vehicles in excess of the speed limit or in any otherwise unsafe manner will be directed to leave the site and not permitted to return.

10.2 SAFETY OF PERSONS AND PROPERTY add the following:

10.2.2 Delete the entire paragraph and substitute the following:

The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, including, but not limited to, the Federal Occupational Safety and Health Act of 1970 and amendments thereto, bearing on safety of persons or property or their protection from damage, injury or loss. The Contractor shall conform to requirements of the Federal Occupational Safety and Health Act, and the Construction Safety Code. The requirements of the State, Local and Association Codes shall apply where they are equal to or more restrictive than the requirements of the Federal Act.

10.2.2.1 The Contractor will be responsible for providing general safeguarding as well as gaining compliance with the requirements of safety codes and ordinances and coordinating with all Contractors on the Project in accordance with N.J.S.A. 34:5-166 etseq. the State of New Jersey Construction Safety Code.

10.2.2.2 The Contractor shall comply with the requirements of the latest edition of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, Inc., provided that if any such provisions disagrees with that of an applicable law, regulation or code, the Contractor shall comply with the safer or more stringent provisions.

10.2.2.3 The Contractor shall submit with its bid an OSHA Safety Certification on the form included in these Specifications, certifying evidence that a full-time representative shall be on site who shall have completed or be currently enrolled in an OSHA safety training program (30 hour OSHA certified program or equivalent program) which shall be acceptable to the Owner.

10.2.2.4 The Contractor shall obtain Material Safety Data Sheets (MSDS) for all material to be used on site and prior to material being brought on site. The Contractor shall maintain Material Safety Data Sheets and make them available for inspection to everyone as required by law.

10.2.2.5 The Contractor shall hold weekly safety meetings with its subcontractors to provide for the safeguarding of persons and property. The Contractor shall record minutes of the meetings and submit copies to the owner on a weekly basis for the record.

10.2.2.6 The Contractor shall provide the Owner, at the initial project meeting, a written safety program and hazard communication program as required by OSHA.

10.2.3.1 The General Contractor is responsible for maintaining the fenced construction area for the duration of the project including general trash removal and maintaining the grass if applicable.

10.2.4.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing. The work shall not be resumed except by written directive by the Owner.

10.2.5.1 The Contractor shall protect all materials and equipment for which he is responsible, which is stored at the Project Site for incorporation in the work, or which has been incorporated into the work. He shall replace all such materials and equipment which may be lost, stolen, or damaged at its expense, whether or not such materials or equipment have been entirely or partially paid for by the Owner.

10.2.6.1 In an effort to promote a safe and drug free workplace, contractor and its subcontractors shall be required to have a drug and alcohol testing program whereby employees will be required to submit to random drug and alcohol testing to the extent permitted by law. The contractor shall provide signs (12" x 24") at all pedestrian points of entry into the construction site which states, "All workers entering this site acknowledge that this is a drug and alcohol-free environment and may be subject to random drug and alcohol testing". Drug and alcohol testing shall also be conducted by contractor or subcontractor at the Owner’s request, where the Owner or its representative has a reasonable suspicion to believe that an employee of the contractor or subcontractor is under the influence of drugs or alcohol. All testing shall be done at the contractor or subcontractor’s sole expense.

10.2.7 Delete the entire paragraph and substitute the following:

The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition. Prior to bringing any fill material onto the Project, the Contractor shall have the material tested and provide certification that the material is clean and free from environmental contamination.

10.2.7.1 The Contractor shall conduct daily comprehensive safety inspections of the work site and submit to the Architect weekly reports indicating the results conclusions and actions taken as a result of the inspections and any findings of non-conformance with current OSHA standards.

10.2.7.2 The Contractor shall stop work and immediately remedy any and all safety infractions brought to their attention by the Owner or Architect or governing authorities

having jurisdiction over the project. Any time lost as a result of safety violations shall not be grounds for delay or time extensions to the contract.

10.2.7.3 The Contractor shall remove snow or ice from the site, as required to provide safe access to the work.

10.2.7.4 It is a requirement of this Contract that there is an absence of mold in the final product, and that best practices for prevention be followed. Actual remediation, if required, shall be performed by mold remediation experts hired by the responsible Contractor.

10.2.7.5 The General Contractor is responsible for maintaining the fenced construction area for the duration of the project including general trash removal and maintaining the grass if applicable.

10.2.8 Substitute “48 hours” in place of “21 days”.

10.2.9 Contractor is required to follow and enforce the work rules set forth below. Failure to comply with or enforce any of these rules will be grounds for withholding of payment, suspension and/or termination of this Contract:

10.2.9.1 No use of alcoholic beverages prior to or during working hours. Anyone found impaired will be escorted from the Project site.

10.2.9.2 No use of illegal drugs or prescription medications which could induce drowsiness or otherwise impair perception of performance. Use of illegal drugs may results in prosecution to the fullest extent of the law. Any warning associated with use of prescription drugs must be complied with, particularly warning against operation of machinery and equipment.

10.2.9.3 No horseplay or rough-housing will be allowed.

10.2.9.4 No sexual, racial, or ethnic harassment, or similar conduct will be tolerated.

10.2.9.5 All employees shall use proper sanitation habits including use of toilet facilities and garbage cans.

10.2.9(6 All employees shall dress in clothing appropriate for the work they are to perform. All personnel are to wear hardhats, safety shoes, glasses, gloves, masks or respirators, noise protection devices, and other protective clothing and equipment as required by OSHA standards.

10.2.9.7 All equipment is to be properly stored and/or secured at the end of the workday or if it is to remain idle for greater than one hour.

10.2.9.8 All personnel are to be made aware of the availability of Material Safety Data Sheets for materials used at the Project site. This information is available from the Contractor using the product. The Contractor shall maintain a copy of all MSDS forms at the construction site office for all personnel to review. Contractors shall submit to Construction Manager all MSDS sheets and shall cooperate in the posting of all required notifications relative to the use of hazardous substances on school property. Contractor to comply with Pennsylvania Law regarding the use or storage of hazardous substances in Schools. Also, MSDS sheets will be posted prior to product being delivered to site.

10.3 HAZARDOUS MATERIALS Add the following:

10.3.1 Add the following after the last sentence in the paragraph

The contractor is specifically responsible for prevention of mold growth in the areas under construction and shall implement dehumidification or other such supplemental and temporary means of HVAC as required to prevent mold. If mold develops during construction the Contractor will be responsible for remediation and costs thereof.

10.3.1.1 Add the following:

The Contractor will report the condition to the Owner, Construction Manager, and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written directive of the Owner.

10.3.1.2 Any Contractor performing any type of renovation or construction in or around existing buildings must contact the environmental services department of the Owner to be informed of the Owner's asbestos procedures.

10.3.1.3 Any Contractor disturbing or damaging any asbestos identified will be totally responsible for its repair and/or removal in accordance with applicable laws and regulations at no additional cost to the Owner and in conformance with OSHA 29 CFR Part 1910.

10.3.2 Delete the entire paragraph and substitute the following:

Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written directive of the Owner. The Contract Time shall be extended appropriately. Contractor shall not be entitled to any compensation or recovery of any damages, in connection with any delay, as more fully set forth in Subparagraph 8.3.3.

10.3.3 Delete the entire paragraph and substitute the following:

To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss or expense is due to the fault or negligence of the party seeking indemnity, including, but not limited to, the Contractor, Architect, Architect's consultants and/or agents and employees of any of them.

10.3.4 Delete the last sentence of the paragraph.

10.3.6 Append the following:

Nothing contained herein shall be construed to require the Owner to indemnify the Contractor where the Contractor performs the work out of sequence or at a time other than that indicated in the Construction Schedule.

10.3.7 ASBESTOS add the following:

10.3.7.1 Any Contractor performing any type of renovation or construction in or around existing buildings must contact the environmental services department of the Owner to be informed of the district's asbestos procedures.

10.3.7.2 Each Contractor shall anticipate in its bid, extra time required to coordinate with the Owner for removal of any asbestos encountered during demolition work associated with this project.

10.3.7.3 Any Contractor disturbing or damaging any asbestos identified will be totally responsible for its repair and/or removal in accordance with applicable laws and regulations at no additional cost to the Owner and in conformance with N.J.A.C. 5:23-8.1 et seq. Asbestos Hazard Abatement Subcode. The Contractor shall be solely responsible for the payment of any and all fines and penalties which may be assessed against the Owner in connection with the disturbance or damaging of any asbestos containing materials.

10.3.8 VOLATILE ORGANIC COMPOUNDS (VOC) add the following:

10.3.8.1 All materials used on this Project shall comply with all applicable governmental and local VOC requirements.

10.3.9 It is a requirement of this Contract that there is an absence of mold in the final product, and that best practices for prevention be followed. Actual remediation, if required, shall be performed by mold remediation experts hired by the responsible Contractor.

10.3.10 Prior to bringing any fill material onto the project site, the Contractor must have the material tested and certified to be clean and free from any environment contamination.

10.3.11 Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal when applicable.

10.4 EMERGENCIES add the following:

Prior to first paragraph add 10.4.1

10.4.2 The Contractor must provide, with their executed Contract Agreement, a list of home or mobile telephone numbers for those personnel who would be contacted in the event of any emergency at the project during non-business working hours.

ARTICLE 11 – INSURANCE AND BONDS delete the entire contents of the Article and replace with the following paragraphs:

11.1 CONTRACTOR'S LIABILITY INSURANCE:

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located and rated "A" or better by A.M. Best Company such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor’s operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, including acts of joint negligence between the Owner and/or Architect and those entities previously mentioned:

.1 Claims under workers’ compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed, including private entities performing Work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified for mandatory coverage for the duration of the Project;

.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees, or persons or entities excluded by statute from the requirements of Clause 11.1.1.1 but required by the Contract Documents to provide the insurance required by the Clause;

.4 Claims for damages insured by usual personal injury liability coverage;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations;

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Section 3.18; and

.9 Claims for damage because of hazardous operations including but not limited to, explosion, collapse, and underground property damage.

11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The policy shall be written on an occurrence basis, not on a claims made basis.

11.1.3 Certificates of insurance and endorsements indicating that the coverage is primary, noncontributory (meaning the insurance provides primary coverage in connection with personal injury, death and/or property damage caused in whole or in part by the Contractor, its employees, agents, officers and/or subcontractors in connection with the project), which are acceptable to the Owner within seven (7) days of the Agreement and shall be filed with the Owner (with copies to the Architect) prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire and the limits will not be reduced until at least thirty (30) days' prior written notice has been given to the Owner. Additionally, these certificates and policies shall name the Owner, the Architect and the Engineer and their consultants, as additional named insureds and the certificate(s) of insurance or policy endorsements, as appropriate, shall indicate that coverage provided to the additional insureds is primary, non-contributory coverage. In the event of cancellation, the Contractor shall obtain insurance in the same amount and for the same coverage from another carrier prior to the date of cancellation. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning change in coverage on

account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor no later than the effective date of the change in coverage.

11.1.4 The Contractor shall ensure that each of its subcontractors, procures and maintains during the life of its subcontract the insurance coverages of the type and in the same amounts as specified in this Article or shall insure the activities of its subcontractors in its own policy. Proof of insurance by way of certificates to be supplied to the Owner and copies to the Architect as required by section 11.1.3.

11.1.4.1 The Contractor shall defend and indemnify the Owner, the Architect, and the Engineers and their consultants and respective officers, agents and employees, as provided in Article 3.18. The indemnified parties may defend themselves, at the Contractor's expense, from any claim or lawsuit which may arise out of the Contractor's performance or lack of performance under the terms of this contract or they may elect to have the Contractor provide them with legal representation at the Contractor's own expense.

11.1.4.2 The Owner, Architect and Construction Manager may defend themselves, at the Contractor's expense, from any claim or lawsuit which may arise out of the Contractor's performance or lack of performance under the terms of this contract or they may elect to have the Contractor provide them with legal representation at the Contractor's own expense.

11.1.4.3 The Owner and it employees; The Architect; and the Construction Manager, and their respective agents, servants, officers and employees shall be named as additional insured parties on all insurance policies. The insurance certificates or policy endorsements shall state that the insurance policies are written to provide primary, non-contributory coverage.

11.1.5 The insurance required pursuant to this Article shall be written in the following minimum limits of liability and shall be in the names of the Contractor, the Owner, the Architect and the Engineers, as their interest may appear. The amounts set forth in this section may be increased, in which case a Supplementary Schedule of Minimum Insurance Limits of Liability shall be included in the Contract Documents setting forth such increased limits.

The minimum insurance coverage required by the Board to be maintained by the successful bidder through either insurance policies from insurance companies licensed to do business in the State and rated A or better by A.M. Best Company, or through formal fully funded self-insurance programs authorized by law as follows:

.1 Workers Compensation: (in accordance with the laws of New Jersey and any other jurisdiction required to protect employees of the Board and any and all Contracted Parties who will be engaged in the performance of the work on this project)

Applicable Federal, State:	Statutory
Employers' Liability	$500,000.00 (each accident)
Disease - Each Employee	$500,000.00
Disease – Policy Limit	$500,000.00

.2 Contractor's Liability Insurance: covering any and all bodily injury and property damage arising out of or in connection with the work performed hereunder (including coverage for premises, operations, explosions, collapse and underground operations, independent contractor protection, sublet work, elevators, contractual liability, broad

form property damage, products liability and completed operations) and personal injury (with employment exclusion deleted):

a. Comprehensive General Liability and Comprehensive Automobile Liability:

General Liability - Combined single limit as follows:

Each Occurrence	$1,000,000.00
Aggregate	$2,000,000.00

Automobile Liability (Owned, Non-Owned and Hired/ Combined Single Limit):

Each Occurrence	$1,000,000.00
Each Person	$1,000,000.00

.3 Excess Umbrella Liability: $5,000,000.00

Excess liability shall have a drop down provision to cover over $1,000,000 of Employers' Liability section of Workers' Compensation listed above.

.4 Contractual Liability Endorsement (Bodily Injury and Property Damage Combined):

Each Occurrence $2,000,000.00

.5 Completed Operations & Products Liability*:

Aggregate $2,000,000.00

*Maintain until one year after issuance of Final Certificate of Payment.

.6 Asbestos Abatement Liability Insurance:

In addition to the insurance requirements in the General Conditions, the Contractor licensed to perform Asbestos Abatement work shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project site is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by anyone directly employed by any of them, or by anyone for whose acts any of them may be liable. Provide Contractor's Asbestos Abatement Liability in the occurrence form as follows:

Each Occurrence	$1,000,000.00
Aggregate	$1,000,000.00
Excess Umbrella Liability:	$5,000,000.00

All insurance required by this Section or any other insurance required by the Contract Documents shall identify the Owner, the Owner's Architect, and the Asbestos Abatement Consultant each as an "additional insured".

11.1.6 The above insurance policies shall:

(a) include an indemnification provision as specified in Article 3.18,

(b) include completed operation coverage, and

(c) Not be subject to any of the special property damage liability exclusions: explosion, collapse, damage to underground wires, piping and conduits which are commonly referred to as the XCU exclusions, and Certificates of Insurance furnished by the Contractor shall show by specific reference that each of the foregoing items has been provided for.

11.1.7 The insurance required by paragraph 11.1 is not intended to cover machinery, tools or equipment owned or rented by the Contractor which are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's expense, provide insurance coverage for owned or rented machinery, tools or equipment.

11.1.8 The above policies for Comprehensive General Liability must be so written as to include Contingent Contractor's Insurance to protect the Contractor against claims arising from the operations of Subcontractors.

11.1.9 The Certificates of Insurance furnished by the Contractor and Subcontractor shall include a clause obligating the insurer to give the Owner and each additional insured thirty (30) days prior to written notice of the cancellation of or any material change in the insurance coverage and endorsements to the policies. Policies expiring on a fixed date before Final Acceptance shall be renewed and filed with the Owner before the expiration date.

11.1.10 Nothing contained herein shall be interpreted to relieve the Contractor of its obligation to complete the work without additional cost to the Owner beyond the Contract Amount. Any loss or cost of repair not covered or not fully covered by insurance shall be borne by the Contractor without additional cost to the Owner beyond the Contract Amount. The Contractor will be responsible to cover all theft or vandalism costs to repair or replace materials including labor.

11.1.11 Contractor shall assume full responsibility and liability for any and all injuries to any person and any and all damages to any property resulting from or in connection with the project which are caused by any error, omission, or negligent act of the Contractor, its agents and employees, and any Subcontractor which he may employ.

11.1.12 To the extent that any of the foregoing provisions are inconsistent with the insurance requirements set forth in the Project Manual, the foregoing provisions shall govern. The insurance provided by the Contractor and its subcontractors shall comply with all requirements which may be imposed by the State of New Jersey or any of its agencies with jurisdiction over this Project. In the event the contractor is required by the Owner or the State of New Jersey or its agencies to provide additional insurance, said insurance shall be provided by contractor at contractor's expense.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be

covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

11.3.1.1 Property insurance shall be on an “all-risk” or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect’s and Contractor’s services and expenses required as a result of such insured loss.

11.3.1.1.1 The term "extended coverage" shall be deemed to include coverage against lightning, wind, hail, riots and civil commotion, vehicle damage, aircraft damage and smoke, exclusive of theft and vandalism. The "All Risk" Insurance coverage shall also include the interests of the Architect.

11.3.1.2 If the Owner elects not to purchase such property insurance required by the Contract, and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then affect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

11.3.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.3.1.6 The fact that the Owner is furnishing All Risk Insurance shall not be interpreted to relieve the Contractor of its obligation to complete the work without additional cost to the Owner beyond the Contract Amount. Any loss or cost of repair not covered or not fully covered by insurance shall be borne by the Contractor without additional cost to the Owner beyond the Contract Amount. The Contractor will be responsible to cover all theft or vandalism costs to repair or replace materials including labor.

11.3.1.7 The Contractor may carry whatever additional insurance he deems necessary to protect himself against hazards [not covered by the Owner's All Risk Insurance] and against loss of owned or rented capital equipment and tools owned by mechanics or any tools, equipment, scaffolding, staging, towers, and forms owned or rented by the Contractor, the capital value of which is not included in the cost of work.

11.3.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.3.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Contractor shall furnish a Performance Bond and a Labor and Material Payment Bond each in the full amount of the Contract sum for faithful performance and payment obligations arising thereunder as stipulated in the bidding requirements, in a form satisfactory to the Owner and consistent with New Jersey Statutes.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

The Contractor shall require the attorney in fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of its Power of Attorney.

11.4.2.1 Each Contractor will be required to furnish the Owner with a two (2) year maintenance bond in the amount of 100% of the final adjusted Contract Sum commencing upon the date the Final Application for Payment is accepted by the Owner.

11.4.3 Additional or Substitute Bond

11.4.3.1 If at any given time the Owner, for justifiable cause, shall be or become dissatisfied with the Surety or Sureties for the Performance and/or Payment Bonds, the Contractor shall within five (5) days after notice from the Owner to do so, substitute an acceptable Bond (or Bonds) in such form and sum and signed by such other Surety or Sureties as may be satisfactory to the Owner. The premiums on such Bond shall be paid by the Contractor. No further sums shall be deemed due nor shall be made until the new Surety or Sureties shall have furnished such an acceptable Bond to the Owner.

ARTICLE 12 – UNCOVERING AND CORRECTION OF WORK

12.1 UNCOVERING OF WORK add the following:

12.1.1 Delete the entire paragraph and substitute the following:

If any portion of the Work should be covered contrary to the request of the Architect or to requirements specifically expressed in the Contract Documents, it shall, if required by public authority or the Architect, be uncovered for observation, inspection, testing or approval and the work shall be replaced at the Contractor's expense without change in the contract time.

12.2 CORRECTION OF WORK add or modify the following:

12.2.1 Append the following to the end of the paragraph:

Nothing contained herein shall be construed so as to prohibit the Owner from withholding payment to the extent as may be necessary to protect against loss on account of defective work not remedied or any form of payment claims against the Contractor that may subsequently have accrued

12.2.2.1 Delete the entire paragraph and substitute the following:

In addition to the Contractor's obligations under Section 3.5, if, within two-year after the date of the Final Application for Payment is accepted by the Owner or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the two-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4. The Contractor shall bear all costs of correcting any and all Work not complying with this warranty, and the Contractor and its Surety shall indemnify the Owner for all costs, expenses, loses, and/or damages incurred by the Owner, including Attorney's fees, additional testing and inspections and compensation for the services and expenses of the Architect made necessary thereby. This warranty is in addition to any other warranty or remedy provided elsewhere in the Contract Documents and shall survive the expiration of any such other warranty, acceptance of a final payment for the Work, and the termination of the Contract for Construction.

12.2.2.2 Delete the entire paragraph and substitute the following:

The two-year period for correction of Work shall be extended with respect to portions of Work first performed after the date the Final Application for Payment is accepted by the

Owner by the period of time between the date the Final Application for Payment is accepted by the Owner and the actual completion of that portion of the Work.

12.2.2.3 Substitute the word “two” in place of the word “one.”

12.2.4.1 The Contractor shall protect all material and equipment for which he is responsible, stored at the site for incorporation or which has been incorporated in the work. The Contractor shall replace all material and equipment, which may be lost or stolen at its expense whether or not it has been entirely or partially paid for by the Owner.

12.3.1 The Contractor and its Surety guarantee to make good, repair and/or correct, at no cost or expense to the Owner, any and all latent defects hereafter discovered, provided only that notice in writing, shall be given by the Owner to the Contractor within two (2) years of the discovery of such defects.

12.3.1.1 This obligation shall survive the termination of any or all other obligation or obligations under the Contract Documents and it is agreed by the Contractor and its Surety that in the event the Owner is required to bring suit under this provision against the Contractor or its Surety to enforce this obligation, the Contractor and its Surety hereby waive any defense of the status of limitations.

ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

Delete the text of the paragraph 13.1 and substitute and add the following:

13.1.1 The Contract shall be governed by the laws of the State of New Jersey and any dispute regarding the Contract shall be venued in New Jersey Superior Court, Ocean County.

13.1.2 The Contractor shall comply with all applicable federal, state and local laws, statutes, regulations and ordinances and any order issued by every governmental entity with jurisdiction over the Project.

13.1.3 Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and, if through mistake or otherwise, and any provisions is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

13.2 SUCCESSORS AND ASSIGNS

13.2.2 Delete the text of the paragraph and substitute the following:

The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project or to the State of New Jersey or any subsidiary Department or Agency without consent of the Contractor. In such event, the assignee shall assume the Owner’s rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.

13.4 TESTS AND INSPECTIONS

13.4.5 Add the following to the end of the last sentence in the paragraph

The Architect, Construction Manager, Owner and Contractor shall be afforded a reasonable opportunity to attend, observe, and witness all inspections and tests of the Work. The Architect or Owner may at any time request and receive from the Contractor satisfactory evidence that materials, supplies or equipment are in

conformance with the Contract Documents. The inspection or test and the receipt of any approval shall not operate to relieve the Contractor from its obligations under the Contract Documents unless specifically so stated by Owner in writing.

13.5 INTEREST

Delete the text of the paragraph and add the following:

13.5.1 No interest shall be paid on unpaid balances except to the extent required by and, in that event, in such amounts as specified in N.J.S.A. 2A:30A-1 to -2.

13.8 RECORD RETENTION (New Section)

13.8.1 The contractor shall maintain all documentation related to products, transactions or services under contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT.

14.1 TERMINATION BY THE CONTRACTOR

14.1.1 Delete the entire paragraph and replace with the following

If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, their agents or employees, or any other persons performing portions of the Work under contract with the Contractor because any order of any Court or other public authority having jurisdiction, an act of government, such as a declaration of national emergency, that requires all Work to be stopped; or because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made approved payments on a Certificate for Payment within the time stated in the Contract Documents, the Contractor may, upon seven (7) additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner payment for Work properly executed only.

14.1.1.1 Delete the entire paragraph.

14.1.1.2 Delete the entire paragraph.

14.1.1.3 Delete the entire paragraph.

14.1.1.4 Delete the entire paragraph.

14.1.2 Delete the entire paragraph.

14.1.3 Delete the entire paragraph.

14.1.4 Delete the entire paragraph.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 Delete all subparagraphs and add the following:

14.2.1.1 refuses or fails to supply adequate and competent supervision, or a sufficiency of properly skilled workers or proper quality or quantity of materials, or fails in any respect to prosecute the Work with promptness and diligence;

14.2.1.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

14.2.1.3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;

14.2.1.4 disregards the instructions of the Architect, Construction Manager or Owner, when such instructions are based on the requirement of the Contract Documents;

14.2.1.5 is adjudged bankrupt or insolvent, or makes a general assignment for the benefit of the Contractor's creditors, or a trustee or receiver is appointed for Contractor or any of its property, or files a petition to take advantage of any debtor's act, or to reorganize under bankruptcy or similar laws;

14.2.1.6 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with the requirements of the Contract Documents;

14.2.1.7 Breaches any warranty made by the Contractor under or pursuant to the Contract Documents;

14.2.1.8 otherwise does not comply with the Contract Documents.

14.2.1.9 has otherwise substantially breached a provision of the Contract Documents.

14.2.1.10 If Contractor is adjudged bankrupt or insolvent, subject to the provision of the National Bankruptcy Act, specifically 11 U.S.C. 101 et seq.

14.2.1.11 If Contractor makes a general assignment for the benefit of creditors.

14.2.1.12 If a trustee or receiver is appointed for Contractor or for any of Contractor's property.

14.2.1.13 If Contractor files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws.

14.2.1.14 If the Contractor interferes with the work of, or otherwise fails to cooperate with, any other contractor on the Project or the Owner’s own forces.

14.2.1.15 If the Contractor fails to comply with the directives of the Owner or otherwise fails to perform its obligations in accordance with the Owner’s concept of the Project.

14.2.1.16 If the Contractor fails to adhere to the Contract Schedule or otherwise disregards any provision of the Contract Documents which makes time of the essence.

14.2.3 Delete the text of the paragraph and substitute the following:

When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished. In addition to the Owner’s other legal remedies, in the event the Contractor otherwise violates any provisions of the Contract Documents, the Owner may, after giving Contractor and its Surety seven (7) days’ written notice, terminate the services of Contractor, exclude Contractor from the site and take possession of the Work and of all Contractor’s tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work, all materials and equipment stored elsewhere, and finish the Work as Owner may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to Contractor. If such costs exceed such unpaid balance, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Architect and incorporated in a Change Order, but in finishing the Work, Owner shall not be required to obtain the lowest figure for the Work performed.

Where Contractor's services have been so terminated by Owner, the termination shall not affect any rights of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

14.2.4 Delete the text of the paragraph and substitute the following:

If the costs of finishing the Work, including compensation for the services of any Consultants and the Architect's services and expenses made necessary thereby, and the other costs and expenses identified hereinafter, exceed the unpaid balance of the Contract Sum, the Contractor and its Surety shall pay the difference to the Owner upon demand. The costs of finishing the Work include, without limitation, all reasonable Attorney's fees, additional title costs, insurance, additional interest because of any delay in completing the Work, and all other direct and indirect consequential costs, including, without limitation, Liquidated Damages for untimely completion as specified in the Contract Documents, incurred by the Owner by reason of, or arising from, or relating to the termination of the Contractor as stated herein.

14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE add the following:

14.3.3 Should the Owner be prevented or enjoined from proceeding with work or from authorizing its performance either before or after its performance, by reason of any litigation, labor dispute, etc., the Contractor shall not be entitled to make or assert claim for damage by reason of said delay, but Time for completion of the Work will be extended to such reasonable time as the Architect may determine will compensate for time lost by such delay with such determination to be set forth in writing.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

14.4.3 Delete the text of the paragraph and substitute the following:

In case of such termination for the Owner's convenience, The Contractor shall, as a condition of receiving the payment(s) referred to herein, execute and deliver all such papers, turn over all plans, documents and files of whatsoever nature required by the Owner and take all such steps, including the legal assignment of its contractual rights, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor. The Contractor warrants that it will enter into no subcontracts or other agreements that would adversely impact the Owner's rights or increase the Owner's obligations under this Section. In no event shall the Owner be liable to the Contractor for lost or anticipated profits or consequential damages, or for any amount in excess of the compensation due to the Contractor in accord with the Contract Documents for the Work performed as of the date of termination. The warranty and indemnity obligations of the Contractor and Surety shall survive and continue, notwithstanding and termination pursuant to this Section, with respect to the Work performed as of the date of termination.

14.4.4 If Owner terminates the Contract for cause pursuant to Paragraph 14.2 and it is subsequently determined that the Owner was not authorized to terminate the Contract as provided in Paragraph 14.2, the Owner's termination shall be treated as a termination for convenience under this Paragraph 14.4 and the rights and obligations of the parties shall be the same as if the Owner has issued a notice of termination to the Contractor as provided in this Paragraph 14.4.

ARTICLE 15 – CLAIMS AND DISPUTES.

15.1 CLAIMS add the following subparagraphs:

15.1.2 add the following to the end of the last paragraph.

The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

15.1.2.1 No act or omission by the Owner or Architect, or by anyone acting on behalf of either shall be deemed or construed as a waiver or limitation of any right or remedy under the Contract Documents, or as an admission, acceptance, or approval with respect to any breach of the Contract for Construction or failure to comply with the Contract Documents by the Contractor, unless the Owner expressly agrees, in writing.

15.1.2.2 The Owner's exercise, or failure to exercise any rights, claims or remedies it may have arising out of or relating to the Contract Documents shall not release, prejudice, or discharge the Owner's other rights and remedies, nor shall it give rise to any right, claim, remedy or defense by any other person, including the Contractor, its Surety, any Subcontractor, or any other person or entity.

15.1.2.3 Whenever possible, each provision of the Contract Documents shall be interpreted in a manner as to be effective and valid under applicable law. If, however, any provision of the Contract Documents, or portion thereof, is prohibited or found invalid by law, only such invalid provision or portion thereof shall be ineffective and shall not invalidate or affect the remaining provision of the Contract Documents or valid portions of such provision, which shall be deemed severable.

15.1.2.4 In the event of the appointment of a trustee and/or receiver or any similar occurrence affecting the management of the account of the Contractor pertaining to the Work, it shall be the obligation of the Contractor, its representatives, receivers, sureties, or successors in interest to continue the progress of the Work without delay and specifically to make timely payment to Subcontractors and Suppliers of all amounts that are lawfully due them and to provide the Owner and all Subcontractors and Suppliers whose work may be affected with timely notice of the status of receivership, bankruptcy, etc., and the status of their individual accounts.

15.1.2.5 Contractor shall save and keep Owner and Owner's property free from all mechanic's and materialmen's liens, stock notices, notices of intention and all other liens and claims, legal or equitable, arising out of Contractor's work hereunder. In the event any such lien or claim is filed by anyone claiming by, through or under Contractor, Contractor shall remove and discharge same within 10 days of the filing thereof.

15.1.4.1 Delete the paragraph and replace with the following:

Pending final resolution of a Claim, or disputed item of work, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently as directed by the Architect or Construction Manager, with performance of the Contract or disputed item of work, and the Owner shall continue to make payments for work not in dispute in accordance with the Contract Documents.

15.1.5 Add the following to the end of the paragraph

The foregoing written notice shall contain a written statement from the Contractor setting forth in detail the nature and cause of the Claim and an itemized statement of the increase requested to the extent that such costs are reasonably available to the Contractor and accurate. No such written notice shall form the basis of an increase to the Contract Sum unless and until such increase has been authorized by a written Change Order executed and issued according to the terms and conditions set forth herein.

15.1.5.1 All Contractor claims, including but not limited to delay related claims in excess of $25,000 either individually or collectively, shall be the subject of a financial and, or, technical audit. The Contractor shall make its books and records available for review audit and inspection on reasonable notice.

15.1.6.1 Delete the paragraph and replace with the following:

If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and ofthe probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary the extension of time is the sole recourse. Said notice shall itemize all claims and shall contain sufficient detail and substantiating data to permit evaluation of same by Owner and Architect. The documentation must clearly link the delay to specific impacts on project progress and costs with detailed evidence. No such claim shall be valid unless so made. The Contractor's Claim shall include actual costs documented at the time the request is made and/or an estimate of future cost and the actual time impact experienced as of the time of the request and/or the probable effect of delay on the future progress of the Work. Substantiation of a request for additional time shall be done through the use of a Time Impact Evaluation (TIE). In the case of a continuing delay only one Claim is necessary. Any change in the Contract Sum resulting from such claim shall be authorized only by Change Order or Construction Change Directive, as the case may be.

15.1.6.1.1 Any claim for an extension, or extensions, of time must be fully substantiated by incorporation of the impact from the changed condition into an update of the Contractors' Construction Schedule, as set forth in General Conditions Article 3.10. This update must also reflect any other impacts to the schedule resulting from delays, concurrent or non-concurrent, for which any Contractor is responsible. No claims will be evaluated or accepted without inclusion of the substantiation requirements set forth in this article.

15.1.6.2 Add the following to the end of the paragraph

Where the cause of delay is due to the weather conditions, extension of time shall be granted only for unusually severe weather, as determined by reference to historical data. the term "historical data" as used in the preceding sentence shall be construed according to this formula: Average rainfall (or snow, or extreme low temperature) for the past five (5) years for the month in question, plus twenty percent (20%). In other words, weather is not deemed to be unusually severe unless it is 20% worse than the average for that month over the last 5 years.

15.1.6.3 If Contractor is delayed in the progress of the Work at any time by the Owner, Architect, or Construction Manager, due to the incorporation of any major changes to the Work, the Contractor shall not assert any claim regarding the same to any of these parties and the Contractor's sole remedy shall be limited to an extension to the time, and costs as permitted by law, of completion in the amount deemed to be reasonable by the Architect and Construction Manager.

15.1.7.3 Any claim for an extension, or extensions, of time must be fully substantiated by incorporation of the impact from the changed condition into an update of the Contractor's project schedule. This update must also reflect any other impacts to the schedule resulting from delays, concurrent or non-concurrent, for which any Contractor is responsible. No claims will be evaluated or accepted without inclusion of the substantiation requirements set forth in this section.

15.1.7.4 The Contractor waives claims against Owner, Architect, Architect's consultants, and agents and employees of any of them for consequential damages arising out of or relating to this Contract or Agreement. This waiver includes damages incurred by the Contractor including but not limited to principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit. This waiver is applicable, without limitation, to all consequential damages claims due to any termination of the Contractor in accordance with Article 14.

Nothing contained in this section shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

15.2 INITIAL DECISION add the following subparagraphs:

15.2.1 Delete the text of the paragraph and substitute the following:

Claims, excluding those arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise expressly indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If and initial decision is not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner (and its consultants).

15.2.5 Delete the text of the paragraph and substitute the following:

The Initial Decision Maker will render an initial decision approving or rejecting the Claim or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3), notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to litigation in a court of competent jurisdiction.

15.2.6 Delete the text of this paragraph

15.2.6.1 Delete the text of this paragraph

15.2.9 If the initial decision of the Architect is not satisfactory to the Contractor making the claim, the Contractor shall diligently perform the work as directed and shall keep an accurate accounting of all time and materials required to perform the contract.

15.3 MEDIATION add the following:

15.3.2 Delete and replace with the following

The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by a retired Judge of the Superior Court of New Jersey mutually agreed to by the parties. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which

shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

15.3.3 Delete this paragraph

15.3.5 After the parties have complied with the previous sections of the agreement and they still have not resolved the issue, the exclusive and sole jurisdiction for all disputes shall be in the Superior Court of New Jersey and will not be subject to arbitration. Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any mediation or legal proceedings. The prevailing party will be entailed to receive attorney fees and all costs associated with such dispute.

15.4 ARBITRATION

15.4 Delete this paragraph and replace with the following

All questions in dispute between the Owner and the Contractor shall be determined by the Courts having jurisdiction of the subject matter, and neither party shall submit to arbitration by the American Arbitration Association or any other arbitration agency.

15.4.1 Delete this paragraph

15.4.1.1 Delete this paragraph

15.4.2 Delete this paragraph

15.4.3 Delete this paragraph

15.4.4 Delete this paragraph and all following subparagraphs

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION 006235

SECTION 007120 - PREVAILING WAGES

The State of New Jersey Prevailing Wage Act, Chapter 150 Laws of 1963 with applicable wage rates for Ocean County County as published by the Department of Labor and Industry in conformance with N.J.S.A. 34:11-56:25 et seq. is hereby made a part of these Contract Documents. Copies of these wage rates may be obtained from the New Jersey State Department of Workforce Development, is on file in the Office of the Business Administrator and attached hereto.

Should workmen employed by the Contractor, or any Subcontractor covered by this Contract be paid less than required wage rates, the Contractor or Subcontractor will be in violation of Specifications and the Stafford Township Board of Education, Manahawkin, New Jersey , may terminate the Contractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages, and to prosecute the work to completion or otherwise. Contractor and his Sureties shall be liable to the Stafford Township Board of Education.

Contractor agrees to submit to the Stafford Township Board of Education, a certified payroll for each payroll period within ten (10) days of the payment of wages. Contractor further agrees that no payments will be made to the Contractor if certified payrolls are not received. It is the Contractor's responsibility to insure timely receipt by the district of certified payrolls.

Before final payment, furnish Owner with an affidavit stating that all workmen have been paid the prevailing rate of wages in accordance with State requirements.

Keep an accurate record showing the name, craft, or trade and actual hourly rate of wages paid to each workman employed by him in connection with this work. Each Contractor and Subcontractor shall submit Manning Reports showing all information noted above on a weekly basis to the Owner.

Upon request, the Contractor(s) and each Subcontractor shall file written statements certifying to the amounts then due and owing to any and all workmen for wages due on account of the work. The statements shall be verified by the oaths of the Contractor or Subcontractor, as the case may be.

Post the prevailing wage rates for each craft and classification involved in the work, including the effective date of any changes thereof, in prominent and easily accessible places at the Site of the work and in such place or places as used to pay workmen their wages.

Effective April 11, 2000, in accordance with "The Public Works Contractor Registration Act" (P.L. 1999, c.238), no contractor/subcontractor will be permitted to bid on or engage in any contract for public work, as defined in section 2 of P.L. 1963, c.150 (C.34:11-56.26) unless that contractor/subcontractor is registered with the Department of Labor.

Attached hereto and incorporated herein is(are) the Department of Labor and Workforce Development prevailing wage determination(s) for the locality and craft(s) that will be employed in the performance of work under this contract. It is hereby stipulated that each individual who performs work under this contract shall be paid not less than the prevailing wage rate to which that worker is entitled under the New Jersey Prevailing Wage Act, as reflected in the appropriate Department of Labor and Workforce Development prevailing wage determination"; and

In the event it is found that any worker employed by the contractor or any subcontractor covered by this contract has been paid a rate of wages less than the prevailing wage rate required to be paid by this contract, the public body, the lessee to whom the public body is leasing a property or premises or the lessor from whom the public body is leasing or will be leasing a property or premises may terminate the contractor's or subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages, and to

prosecute the work to completion or otherwise. The contractor and his sureties shall be liable to the public body, any lessee to whom the public body is leasing a property or premises, or to any lessor from whom the public body is leasing or will be leasing a property or premises for any excess costs occasioned by the termination of the contractor's or subcontractor's right to proceed with the work, or such part of the work as to which there has been a failure to pay required wages.

The following Certification is to be submitted by the low Bidder after the Bid opening, only when the low Bidder is more than 10% under the next lowest Bidder. It is not a Bid Form that needs to be submitted with the Bid.

54 N.J.R. 1009(a)

LOWEST BIDDER PREVAILING WAGE CERTIFICATION

In the matter of an award of a contract for public work for a project described as:	)	STATE OF NEW JERSEY
	)	DEPARTMENT OF LABOR AND
	)	WORKFORCE DEVELOPMENT
	)	DIVISION OF WAGES &
HVAC Upgrades at Ocean Acres Elementary School	)	HOUR COMPLIANCE
	)	
	)	
	)	Certification of Lowest Bidder

_____, of full age and under oath, duly provides the following sworn statement:

(1). I am the owner and/or highest-ranking official or officer of a company or firm named _____, which holds a currently valid public works contractor registration pursuant to the New Jersey Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq., certificate number _____.

(2). I submitted a bid for a contract award in the above identified project and the public body has informed me that I am the lowest bidder by 10 percent or more as compared to the next lowest bid submitted.

(3). The amount of my bid does include paying the prevailing wage rate to all workers who perform work on the project at rates of pay, including both base wage and fringe benefits, set forth in applicable Wage Determinations, (1) for the appropriate locality, (2) for the appropriate work classification (e.g., carpenter, electrician, mason, plumber), and (3) for the appropriate job title (e.g., Apprentice, Journeyman, Forman), published by the New Jersey Department of Labor and Workforce Development (NJDOL) pursuant to the New Jersey Prevailing Wage Act (NJPWA), N.J.S.A. 34:11-56.25 et seq., and corresponding NJDOL rules, N.J.A.C. 12:60.

I certify under penalty of perjury that the foregoing statements made by me are true. I am aware that if any of the foregoing statements made by me are false, I am subject to punishment. See N.J.S.A. 2C:28-1 et seq., specifically, N.J.S.A. 2C:28-3, within the New Jersey Code of Criminal Justice.

Dated:_____ Signature:_____ Title: _____

END OF SECTION 007120

STATE OF NEW JERSEY
Department of Labor and Workforce Development
Division of Wage and Hour Compliance - Public Contracts Section
PO Box 389
Trenton, NJ 08625-0389

PREVAILING WAGE RATE DETERMINATION

The New Jersey Prevailing Wage Act (N.J.S.A. 34:11-56.25 et seq.) requires that the Department of Labor and Workforce Development establish and enforce a prevailing wage level for workers engaged in public works in order to safeguard their efficiency and general well being and to protect them as well as their employers from the effects of serious and unfair competition.

Prevailing wage rates are wage and fringe benefit rates based on the collective bargaining agreements established for a particular craft or trade in the locality in which the public work is performed. In New Jersey, these rates vary by county and by the type of work performed.

Applicable prevailing wage rates are those wages and fringe benefits in effect on the date the contract is awarded. All pre-determined rate increases listed at the time the contract is awarded must also be paid, beginning on the dates specified. Rates that have expired will remain in effect until new rates are posted.

Prevailing Wage Rate

The prevailing wage rate for each craft will list the effective date of the rate and the following information:

W = Wage Rate per Hour **B** = Fringe Benefit Rate per Hour* **T** = Total Rate per Hour

* Fringe benefits are an integral part of the prevailing wage rate. Employers not providing such benefits must pay the fringe benefit amount directly to the employee each payday. Employers providing benefits worth less than the fringe benefit amount must pay the balance directly to the employee each payday.

Unless otherwise stated in the Prevailing Wage Rate Determination, the fringe benefit rate for overtime hours remains at the straight time rate.

When the Overtime Notes in the Prevailing Wage Rate Determination state that the overtime rates are "inclusive of benefits," the benefit rate is increased by the same factor as the wage rate (i.e. multiplied by 1.5 for time and one-half, multiplied by 2 for double time, etc.).

Apprentice Rate Schedule

An “apprentice” is an individual who is registered with the United States Department of Labor - Office of Apprenticeship and enrolled in a certified apprenticeship program during the period in which they are working on the public works project.

The apprentice wage rate is a percentage of the journeyman wage rate, unless otherwise indicated. The apprentice benefit rate is the full journeyman benefit rate, unless otherwise indicated.

If there is no apprentice rate schedule listed, the individual must be paid at least the journeyman rate even if that individual is in a certified apprentice program for that trade.

If there is no ratio of apprentices to journeymen listed for a particular craft, then the ratio shall be one (1) apprentice to every four (4) journeymen.

Comments/Notes

For each craft listed there will be comments/notes that cover the definition of the regular workday, shift differentials, overtime, recognized holidays, and any other relevant information.

Public Works Contractor Registration

The Public Works Contractor Registration Act (N.J.S.A. 34:11-56.48, et seq.) requires that **all** contractors, subcontractors, or lower tier subcontractors who are working on or who bid on public works projects register with the Department of Labor and Workforce Development. Applications are available at *www.nj.gov/labor* (click on Wage & Hour and then go to Registration & Permits).

Pursuant to N.J.S.A. 34:11-56.51:

No contractor shall bid on any contract for public work as defined in section 2 of P.L.1963, c. 150 (C.34:11-56.26) unless the contractor is registered pursuant to this act. No contractor shall list a subcontractor in a bid proposal for the contract unless the subcontractor is registered pursuant to P.L.1999, c.238 (C.34:11-56.48 et seq.) at the time the bid is made. No contractor or subcontractor, including a subcontractor not listed in the bid proposal, shall engage in the performance of any public work subject to the contract, unless the contractor or subcontractor is registered pursuant to that act.

Snow Plowing

Snow plowing contracts are <u>not</u> subject to the New Jersey Prevailing Wage Act or the Public Works Contractor Registration Act.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Air Conditioning & Refrigeration - Service and Repair **PREVAILING WAGE RATE**

	03/07/25
Journeyman (Mechanic)	W46.23 B31.42 T77.65

Craft: Air Conditioning & Refrigeration - Service and Repair **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
As Shown	1st Year	2nd Year	3rd Year	4th Year	5th Year	Wage = %	of Jnymn	Wage		
Wage and Bene	40%	50%	60%	70%	80%	Bene = %	of Jnymn	Bene		

Ratio of Apprentices to Journeymen - 1:4

Craft: Air Conditioning & Refrigeration - Service and Repair **COMMENTS/NOTES**

THESE RATES MAY BE USED FOR THE FOLLOWING:
- Service/Repair/Maintenance Work to EXISTING facilities.
- Replacement or Installation of air conditioning and refrigeration equipment when the combined tonnage does not exceed 15 tons for refrigeration, or 25 tons for air conditioning.
- Replacement or Installation of "packaged" or "unitary" rooftop-type units when the combined tonnage of the units does not exceed 75 tons.

NOTE: These rates may NOT be used for any work in new construction (including work on new additions).

The regular workday shall consist of 8 hours, starting between 6:00 AM and 10:00 AM, Monday through Friday.

SHIFT DIFFERENTIALS:
- The second and third shifts shall be paid an additional 15% of the hourly rate.
- All shifts must run for a minimum of 5 consecutive days.

OVERTIME:
Hours worked in excess of 8 per day or before or after the regular workday, that are not shift work, and all hours on Saturday shall be paid at time and one-half the hourly rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Boilermaker **PREVAILING WAGE RATE**

	01/12/24
Foreman	W54.11 B47.08 T101.19
General Foreman	W56.11 B48.14 T104.25
Journeyman	W49.11 B45.31 T94.42

Craft: Boilermaker **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1000 Hours	65%	70%	75%	80%	85%	90%	95%			
Benefit =	38.33	39.30	40.32	41.31	42.32	43.32	44.30			

Ratio of Apprentices to Journeymen - *

* 1 apprentice will be allowed for the first 5 journeymen, 1 apprentice for the next 10 journeymen and 1 apprentice for each succeeding 20 journeymen up to a maximum of 5 apprentices per contractor on any one job.

Craft: Boilermaker **COMMENTS/NOTES**

HIGH WORK: All apprentices working on the erection, repair, or dismantling of smoke stacks, standpipes, or water towers shall be paid the Journeyman rate.

The regular workday shall consist of 8 hours, between 8:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall work 7.5 hours and receive 8 hours pay, at a rate equal to the regular hourly rate plus 10%.
- The third shift shall work 7 hours and receive 8 hours pay, at a rate equal to the regular hourly rate plus 20%.
- For "Municipal Water Works" projects only, the following shall apply: Two, four day, 10 hour shifts may be worked at straight time Monday through Thursday. The day shift shall work four days, at 10 hours, for 10 hours pay. The second shift shall work four days, at nine and a half hours, for 10 hours pay, plus 10% the hourly rate for new work and .25 cents on repair work. Friday may be used as a make-up day at straight time, due to weather conditions, hoilday or any other circumstances beyond the employer's control.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays (except Labor Day) shall be paid at double the hourly rate. All hours on Labor Day shall be paid at four times the hourly rate.
- If any other craft employed by the same contractor, or a subcontractor thereof, receives double time in lieu of time and one-half, then the Boilermaker shall receive double time in lieu of time and one-half.
- For "Municipal Water Works" projects only, the following shall apply: Four 10 hour days may be worked Monday through Thursday at straight time. Friday may be used as a make-up day for a day lost to inclement weather, holiday or other conditions beyond the control of the employer. Overtime shall be paid for any hours that exceed 10 hours per day or 40 hours per week.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Boilermaker - Minor Repairs **PREVAILING WAGE RATE**

	01/12/24
Foreman	W35.88 B17.89 T53.77
General Foreman	W36.38 B17.89 T54.27
Mechanic	W34.38 B17.89 T52.27

Craft: Boilermaker - Minor Repairs **COMMENTS/NOTES**

NOTE: These rates apply to MINOR REPAIR WORK ONLY (repair work in the field for which the contract amount does not exceed $125,000.00), for boilers that do not produce electric or are not used in the heating of petroleum products.

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays (except Labor Day) shall be paid at double the hourly rate. All hours on Labor Day shall be paid at four times the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Thanksgiving Day, day after Thanksgiving, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Bricklayer, Stone Mason **PREVAILING WAGE RATE**

	05/13/25
Deputy Foreman	W52.60 B38.68 T91.28
Foreman	W57.35 B38.68 T96.03
Journeyman	W49.60 B38.68 T88.28

Craft: Bricklayer, Stone Mason **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
6 Months	40%	50%	55%	60%	65%	70%	75%	80%		
Benefits	4.66	5.83	6.41	6.99	25.90	27.73	29.57	31.38		

Ratio of Apprentices to Journeymen - 1:5

Craft: Bricklayer, Stone Mason **COMMENTS/NOTES**

The regular workday shall consist of 8 hours, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule (including a day shift) is established, the first, or day shift, shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular rate plus 10%, inclusive of benefits.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 10%, inclusive of benefits, and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular rate plus 10%, inclusive of benefits, and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When an irregular shift must be established, this shift shall receive the regular rate plus 10%, inclusive of benefits.

OVERTIME:
- The first 2 hours in excess of 8 per day, or before or after the regular workday that are not shift work, Monday through Friday, shall be paid at time and one-half the regular rate, inclusive of benefits. Any additional overtime shall be paid at double the regular rate, inclusive of benefits. The first 10 hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. Any additional overtime shall be paid at double the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Saturday may be used as a make-up day for hours lost to inclement weather.
- When Bricklayers/Stone Masons work on Saturday with Laborers, and no other crafts are working on the project for the day, benefits may be paid at straight time. If other crafts are present, the applicable overtime rate for benefits shall be paid.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Carpenter **PREVAILING WAGE RATE**

	06/03/25
Foreman	W66.03 B39.70 T105.73
General Foreman	W74.65 B44.81 T119.46
Journeyman	W57.42 B34.60 T92.02

Craft: Carpenter **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	40%	55%	65%	80%	90%					
Benefit	59.25% of	Appren	tice	Wage Rate	for all	intervals	+ $0.58			

Ratio of Apprentices to Journeymen - 1:3

For Solar installation- all work on solar projects that fall under the jurisdiction of the carpenters, and does not require an electrician, the ratio of Apprentices to Journeymen shall be 1:1.

Craft: Carpenter **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES REGISTERED AS OF 5-1-19:

INTERVAL PERIOD AND RATES
Yearly 40% 55% 65% 80%
Benefits 59.25% of apprentice wage rate for all intervals + $0.58

FOREMAN REQUIREMENTS:
- When there are 2 or more Carpenters on a job, 1 shall be designated as a Foreman.
- When there are 21 or more Carpenters on a job, 2 shall be designated as Foremen.
- When there are 36 or more Carpenters on a job, there shall be 1 General Foreman and 2 Foremen. Thereafter, an additional Foreman shall be required for each additional 10 Carpenters on a job.

The regular workday shall consist of 8 hours, starting between 6:00 AM and 9:00 AM.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule (including a day shift) is established, the day shift shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular rate plus 10%, inclusive of benefits.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 10% and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular rate plus 10% and the third shift shall receive the regular rate plus 15%, inclusive of benefits.
- When an irregular shift must be established, this shift shall receive the regular rate plus 15%, inclusive of benefits.
- All time worked before and after a regularly established shift shall be paid at the applicable overtime rate. When a portion

of the regularly established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.

OVERTIME:
- All hours in excess of 8 per day, or before or after an established shift that are not shift work, and all hours on Saturdays shall be paid at time and one-half the hourly rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for a day lost due to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans' Day may be substituted for the day after Thanksgiving.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Carpenter - Resilient Flooring **PREVAILING WAGE RATE**

	05/01/25
Foreman	W66.03 B39.62 T105.65
Journeyman	W57.42 B34.52 T91.94

Craft: Carpenter - Resilient Flooring **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	40%	55%	65%	80%	90%					
Benefit	59.25%	of	Appren	tice	Wage Rate	for all	intervals	+ $0.50		

Ratio of Apprentices to Journeymen - *

* 1 apprentice shall be allowed to every 2 journeymen or major fraction thereof. No more than 3 apprentices on any one job or project.

Craft: Carpenter - Resilient Flooring **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES REGISTERED AS OF 5-1-19:

INTERVAL PERIOD AND RATES
Yearly 40% 55% 65% 80%
Benefits 59.25% of apprentice wage rate for all intervals + $0.50.

FOREMAN REQUIREMENTS:
- On any job where there are 4 or more Carpenters of Resilient Flooring, 1 must be designated a Foreman.

FOR SYNTHETIC TURF INSTALLATION ONLY:
- The rate shall be 90% of the wage and benefit rate.

The regular workday consists of 8 hours, starting between 6:00 AM and 9:00 AM.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule (including a day shift) is established, the day shift, shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular wage rate plus 10%.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular wage rate, the second shift shall receive the regular wage rate plus 10% and the third shift shall receive the regular wage rate plus 15%.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular wage rate plus 10% and the third shift shall receive the regular wage rate plus 15%.
- When an irregular shift must be established, this shift shall receive the regular rate plus 15%, inclusive of benefits.

OVERTIME:
- Hours in excess of 8 per day or 40 per week, or before or after the regular workday, Monday through Friday, shall be paid at time and one-half the wage rate. Saturday may be used as a make-up day, at straight time, up to 8 hours, for hours lost to reasons beyond the control of the employer, up to a total of 40 hours per week; hours in excess of 8 on Saturday shall

then be paid at time and one-half the wage rate. If Saturday is not a make-up day, all hours on Saturday shall be paid at time and one-half the wage rate. All hours on Sundays and holidays shall be paid at double the wage rate.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for hours lost to reasons beyond the control of the employer. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the wage rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. Veterans' Day may be substituted for the day after Thanksgiving.

County - OCEAN

Craft: Cement Mason **PREVAILING WAGE RATE**

See " Bricklayer, Stone Mason" Rates

Craft: Cement Mason **COMMENTS/NOTES**

See "Bricklayer, Stone Mason" Rates

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Commercial Painter **PREVAILING WAGE RATE**

	05/01/25
Foreman	W50.11 B31.61 T81.72
General Foreman	W54.66 B31.61 T86.27
Journeyman	W45.55 B31.61 T77.16

Craft: Commercial Painter **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
6 Months	40%	45%	55%	65%	70%	75%	80%	80%		
Benefits	9.84	9.84	12.55	12.55	13.65	13.65	16.55	16.55		

Ratio of Apprentices to Journeymen - 1:4

Craft: Commercial Painter **COMMENTS/NOTES**

* Commercial Painters perform work on all commercial structures such as offices, schools, hotels, shopping malls, restaurants, condominiums, etc.

Spraying, sandblasting, lead abatement work on commercial buildings, work performed above 3 stories or 30 feet in height, or using swing scaffolds requires an additional 10% of the wage rate.

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, General Election Day,

Veterans' Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Diver **PREVAILING WAGE RATE**

	05/01/25
Diver	W60.31 B45.12 T105.43
Tender	W48.25 B45.12 T93.37

Craft: Diver **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1500 hours	70%	75%	80%	85%						
Benefit	32.48	33.60	34.72	35.85						

Ratio of Apprentices to Journeymen - 1:4

Craft: Diver **COMMENTS/NOTES**

NOTE: All dive crews must consist of a Tender, a Diver, and a Standby Diver (Standby Diver is the same rate as a Diver).

- Diver- will perform all Dive related tasks at hand.
- Tender- will provide Tending support to the in water Diver and who may also be designated as a Standby Diver .

Diving in Contaminated Water (including, but not limited to, radioactively contaminated water, sewer effluent combined sanitary and storm sewers, or any environment known to be harmful to those with skin contact): Shall receive an additional 20% of the hourly rate.

OVERTIME:
- The first 2 hours in excess of 8 per day (9th and 10th hours), Monday through Friday, and the first 8 hours on Saturdays shall be paid at time and one-half the hourly rate. Hours in excess of 10 per day, Monday through Friday, hours in excess of 8 per day on Saturdays, and all hours on Sundays and holidays shall be paid at double the hourly rate.
- Employees may work four 10-hour days, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, the first 10 hours on Friday shall be paid at time and one-half the hourly rate. Hours in excess of 10 per day shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceeding Friday and Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Dockbuilder/Pile Driver **PREVAILING WAGE RATE**

	05/01/25
Foreman	W57.90 B45.12 T103.02
Journeyman	W48.25 B45.12 T93.37

Craft: Dockbuilder/Pile Driver **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1500 hours	40%	50%	65%	80%						
Benefits	26.02	28.27	31.46	34.78						

Ratio of Apprentices to Journeymen - 1:3

Craft: Dockbuilder/Pile Driver **COMMENTS/NOTES**

NOTE: The following shall be required for type of work indicated-
- There shall be one foreman and four journeymen on all land pile driving rigs. As part of the crew, one may be an apprentice.
- There shall be one foreman and two journeymen on self-contained hydraulic driving rigs. As part of the crew, one may be an apprentice.
- There shall be one foreman and two journeymen when driving sheeting with an excavator. As part of the crew, one may be an apprentice.
- When utilizing a drill rig to install Auger cast piles there shall be one foreman and two journeymen. As part of the crew , one may be an apprentice.
- There shall be one journeyman on drilled or bored soldier piles.
- There shall be not less than one journeyman per rig on all drilled shaft and caissons.
- There shall be not less than one journeyman per rig on all earth retention tie-back and anchors.

Creosote Handling:
May 1st to Sept. 30th: + $0.50 above hourly rate
Oct. 1st to April 30th: + $0.25 above hourly rate

Harzardous Material Work:
-On hazardous material work on a state or federally designated hazardous work site where the worker is required to wear Level A, B or C personal protection, the worker shall receive an additional 20% of the hourly rate, per hour.
- A Dockbuilder/Pile Driver working on a hazardous waste removal project, or site requiring hazardous waste related certification, but who is not working in a zone requiring level A, B or C personal protection, shall receive the hourly rate plus an additional $1.00 per hour. This type of work does not include the handling of creosote or CCA materials; coated materials such as bitumastic, or galvanized; painted materials or any products designed to be used in the industry.

FOREMAN REQUIREMENTS:
- When there are 3 or more Dockbuilders/Pile Drivers on a job, 1 shall be designated as a Foreman.

SHIFT WORK:

- Shift work pertains to both land and water work.
- When a 2 shift schedule (including a day shift) is established, the first shift shall start between 5:00 am and 8:00 am and work for 7 and one-half hours and receive 8 hours pay. The second shift shall start when the first shift ends and shall work for 7 and one-half hours and receive 8 hours pay.
- When a three shift schedule is established, all shifts shall work 7 and one-half hours and receive 8 hours pay.
- When there is no day shift, and a second or third shift is established, a worker shall be paid at time and one-half of the hourly rate.

OVERTIME:
- The first 2 hours in excess of 8 per day (9th and 10th hours), Monday through Friday, and the first 8 hours on Saturdays shall be paid at time and one-half the hourly rate. Hours in excess of 10 per day, Monday through Friday, hours in excess of 8 per day on Saturdays, and all hours on Sundays and holidays shall be paid at double the hourly rate.
- Employees may work four 10-hour days, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, the first 10 hours on Friday shall be paid at time and one-half the hourly rate. Hours in excess of 10 per day shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceeding Friday and Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Drywall Finisher **PREVAILING WAGE RATE**

	05/13/25
Foreman	W49.36 B31.65 T81.01
General Foreman	W51.60 B31.65 T83.25
Journeyman	W44.87 B31.65 T76.52

Craft: Drywall Finisher **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	22.44	29.17	35.90	40.38						
Benefits	17.98	17.98	17.98	17.98						

Ratio of Apprentices to Journeymen - 1:4

Craft: Drywall Finisher **COMMENTS/NOTES**

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, and the third shift shall receive 8 hours pay for 7 hours of work.
- Shift work must run for a minimum of 5 consecutive workdays.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Electrician **PREVAILING WAGE RATE**

	06/02/25	06/01/26
Assistant General Foreman	W70.39 B56.04 T126.43	W74.47 B56.23 T130.70
Foreman (2 to 4 Journeymen)	W65.20 B51.90 T117.10	W68.98 B52.08 T121.06
Foreman (5 to 10 Journeymen)	W66.36 B52.81 T119.17	W70.20 B53.00 T123.20
General Foreman (101+ Journeymen)	W80.78 B64.30 T145.08	W85.46 B64.52 T149.98
General Foreman (24 to 100 Journeymen)	W75.01 B59.71 T134.72	W79.35 B59.92 T139.27
Journeyman, Cable Splicer	W57.70 B45.93 T103.63	W61.04 B46.09 T107.13
Lead Foreman (11 to 23 Journeymen)	W69.24 B55.12 T124.36	W73.25 B55.31 T128.56
Plan Reader	W62.32 B49.60 T111.92	W65.92 B49.78 T115.70

Craft: Electrician **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	30%	40%	50%	60%	80%					
Benefit	13.78	18.37	22.97	27.56	36.74					

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE AS OF 6-1-26:

INTERVAL	PERIOD AND RATES				
Yearly	30%	40%	50%	60%	80%
Benefits	13.83	18.43	23.05	27.65	36.87

THESE RATES ALSO APPLY TO THE FOLLOWING:
- All burglar and fire alarm work.
- All fiber optic work.
- Teledata work in new construction (including additions).
- Teledata work involving 16 instruments or more.

FOREMAN REQUIREMENTS (Foreman counts, do not include apprentices):
- 2 to 4 Journeymen- 1 must be a Foreman (2 to 4 JW).
- 5 to 11 Journeymen- 1 must be a Foreman (5 to 10 JW).
- 12 to 22 workers- 1 must be a Lead Foreman and 1 must be a Foreman (5 to 10 JW).
- 23 workers- 1 must be a Lead Foremen and 2 must be a Foreman (5 to 10 JW).
- 24 to 34 workers- 1 must be a General Foreman (24 to 100) and 3 must be a Foreman (5 to 10 JW).
- 35 to 36 workers- 1 must be a General Foreman (24 to 100) and 4 must be a Foreman (5 to 10 JW).
-37 to 46 Journeymen- 1 must be a General Foreman (24 to 100), 1 must be an Assistant General Foremen and 4 must be a Foreman (5 to 10 JW)
- For each additional 10 Journeymen- 1 additional Foreman (5 to 10) shall be added.
- For each additional 40 Journeymen- 1 additional Assistant General Foreman shall be added.
- 101+ Journeymen- 1 must be a General Foreman (101+).

- The regular workday shall be 8 hours, between the hours of 7:00 am and 4:30 pm.

HEIGHT WORK:
- Work performed 50 feet above ground or floor - additional $2.00 per hour.
- Work on radio and transmission towers, and smoke stacks: +25% of the Total Rate.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM): 8 hrs. pay for 7.5 hrs. work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM): 8 hrs. pay for 7 hrs. work + an additional 15% of the regular rate, per hour, inclusive of benefits.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceding Friday. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Electrician - Teledata (15 Instruments and Less) **PREVAILING WAGE RATE**

	12/02/24
Journeyman Technician (1-2 workers on job)	W50.93 B25.73 T76.66
Master Tech./Gen. Foreman (26+ workers on job)	W66.21 B33.45 T99.66
Senior Tech./Asst. Gen. Foreman (16-25 workers on job)	W60.61 B30.62 T91.23
Technician A/Foreman (9-15 workers on job)	W58.06 B29.33 T87.39
Technician B/Foreman (4-8 workers on job)	W55.51 B28.05 T83.56
Technician C/Foreman (3 workers on job)	W52.97 B26.76 T79.73

Craft: Electrician - Teledata (15 Instruments and Less) **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
* 6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefit	9.00	9.00	10.29	11.06	12.35	13.90	15.69	17.24	19.04	20.84

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician - Teledata (15 Instruments and Less) **COMMENTS/NOTES**

* The apprentice wage rate is paid at the percentage of the Journeyman Technician wage rate .

NOTES:
1) These rates are for service, maintenance, moves and/or changes affecting 15 instruments or less. These rates may NOT be used for any new construction or any fiber optic work .
2) The number of workers on the jobsite is the determining factor for which Foreman category applies.

HEIGHT WORK (work performed 50 feet above ground/floor): +$2.00 per hr.

The regular workday consists of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM): 8 hrs. pay for 7.5 hrs. work + an additional 10% of the regular rate, per hour, inclusive of benefits
- 3rd Shift (12:30 AM to 8:00 AM): 8 hrs. pay for 7 hrs. work + an additional 15% of the regular rate, per hour, inclusive of benefits

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, that are not shift work, and the first 10 hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. Hours in excess of 10 on Satrurday and all hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked Monday thru Friday, between the hours of 7:00 AM and 5:30 PM. A make-up day may be used for the day not being worked during the four 10-hour day schedule if a holiday occurs during the week or for any other conditions that prevent an employee from working the four 10-hour day schedule.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. Saturday holidays will be observed the preceding Friday.

County - OCEAN

Craft: Electrician - Teledata (16 Instruments & More) **PREVAILING WAGE RATE**

See "Electrician" Rates

Craft: Electrician - Teledata (16 Instruments & More) **COMMENTS/NOTES**

See ELECTRICIAN Rates

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Electrician- Outside Commercial **PREVAILING WAGE RATE**

	06/02/25	06/01/26
Assistant General Foreman	W70.69 B55.74 T126.43	W74.79 B55.91 T130.70
Cable Splicer & Equipment Operator	W57.94 B45.69 T103.63	W61.30 B45.83 T107.13
Foreman (2 to 4 Journeymen)	W65.47 B51.63 T117.10	W69.27 B51.79 T121.06
Foreman (5 to 10 Journeymen)	W66.63 B52.54 T119.17	W70.50 B52.70 T123.20
General Foreman (101+ Journeymen)	W81.12 B63.96 T145.08	W85.82 B64.16 T149.98
General Foreman (24 to 100 Journeymen)	W75.32 B59.40 T134.72	W79.69 B59.58 T139.27
Groundman	W40.56 B31.98 T72.54	W42.91 B32.08 T74.99
Journeyman Lineman	W57.94 B45.69 T103.63	W61.30 B45.83 T107.13
Lead Foreman (11 to 23 Journeymen)	W69.53 B54.83 T124.36	W73.56 B55.00 T128.56
Plan Reader	W62.58 B49.34 T111.92	W66.20 B49.50 T115.70

Craft: Electrician- Outside Commercial **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	60%	65%	70%	75%	80%	85%	90%			
Benefits	27.42	29.70	31.98	34.26	36.55	38.84	41.12			

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician- Outside Commercial **COMMENTS/NOTES**

APPRENTICE RATE SCHEDULE AS OF 6-1-26:

INTERVAL	PERIOD AND RATES						
Yearly	60%	65%	70%	75%	80%	85%	90%
Benefits	27.50	29.78	32.08	34.37	36.66	38.95	41.24

* FOR UTILITY WORK PLEASE SEE STATEWIDE RATES

FOREMAN REQUIREMENTS (Foreman counts, do not include apprentices):
- 2 to 4 Journeymen Lineman- 1 must be a Foreman (2 to 4 JL).
- 5 to 11 Journeymen Lineman- 1 must be a Foreman (5 to 10 JL).
- 12 to 22 Journeymen Lineman- 1 must be a Lead Foreman and 1 must be a Foreman (5 to 10 JL).
- 23 Journeyman Lineman- 1 must be a Lead Foremen and 2 must be a Foreman (5 to 10 JL).
- 24 to 34 Journeyman Lineman- 1 must be a General Foreman (24 to 100) and 3 must be a Foreman (5 to 10 JL).
- 35 to 36 workers- 1 must be a General Foreman (24 to 100) and 4 must be a Foreman (5 to 10 JL).
- 37 to 46 Journeymen Lineman- 1 must be a General Foreman (24 to 100), 1 must be and Assistant General Foreman and 4 must be a Foreman (5 to 10 JL).
- For each additional 10 Journeymen- 1 addtional Foreman (5 to 10) shall be added.
- For each additional 40 Journeymen- 1 additional Assistant General Foreman shall be added.
- 101+ Journeymen- 1 must be a General Foreman (101+).

HAZMAT WORK:
- Work is to be performed by a Journeyman Lineman who is qualified to perform HAZMAT work - additional 10% per hour.

SHIFT DIFFERENTIALS:
2nd Shift (4:30 PM to 12:30 AM): 8 hrs. pay for 7.5 hrs. work + an additional 10% of the regular rate, inclusive of benefits.
3rd Shift (12:30 AM to 8:00 AM): 8 hrs. pay for 7 hrs. work + an additional 15% of the regular rate per hour, inclusive benefits.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceding Friday. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Electrician-Solar **PREVAILING WAGE RATE**

	06/02/25	06/01/26
Assistant General Foreman (66+ Journeymen)	W70.39 B56.04 T126.43	W74.47 B56.23 T130.70
Foreman (1 to 16 Journeymen)	W66.36 B52.81 T119.17	W70.20 B53.00 T123.20
General Foreman (101+ Journeymen)	W80.78 B64.30 T145.08	W85.46 B64.52 T149.98
General Foreman (33 to 100 Journeymen)	W75.01 B59.71 T134.72	W79.35 B59.92 T139.27
Journeyman, Cable Splicer	W57.70 B45.93 T103.63	W61.04 B46.09 T107.13
Solar Lead Foreman (17 to 32 Journeymen)	W69.24 B55.12 T124.36	W73.25 B55.31 T128.56

Craft: Electrician-Solar **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	30%	40%	50%	60%	80%					
Benefits	13.78	18.37	22.97	27.56	36.74					

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician-Solar **COMMENTS/NOTES**

* These rates apply to all aspects of a SOLAR project.

APPRENTICE RATE SCHEDULE AS OF 6-1-26:

INTERVAL	PERIOD AND RATES				
Yearly	30%	40%	50%	60%	80%
Benefits	13.83	18.43	23.05	27.65	36.87

FOREMAN REQUIREMENTS (Foreman counts, do not include apprentices):
- 1 to 6 Journeymen - 1 must be a Foreman (1 to 16 JW).
- 17 to 32 Journeymen- 1 must be a Solar Lead Foreman and 1 must be a Foreman (1 to 16 JW).
- 33 Journeymen- 1 must be a General Foreman (33 to 100) and 2 must be a Foreman (1 to 16 JW).
- 34 to 49 Journeymen- 1 must be a General Foreman (33 to 100) and 3 must be a Foreman (1 to 16 JW).

- 50 to 66 Journeymen- 1 must be a General Foreman (33 to 100), 1 must be an Assistant General Foreman and 4 must be a Foreman (1 to 16 JW).
- 67 to 82 Journeymen- 1 must be a General Foreman (33 to 100), 1 must be an Assistant General Foreman and 5 must be a Foreman (1 to 16 JW).
- For each additional 16 Journeymen- 1 additional Foreman (1 to 16) shall be added.
- For each additional 40 Journeyman- 1 additional Assistant General Foreman shall be added.
- 101+ Journeymen- 1 must be a General Foreman (101+).

- The regular workday shall be 8 hours, between the hours of 7:00 am and 4:30 pm.

HEIGHT WORK:
- Work performed 50 feet above ground or floor - additional $2.00 per hour.
- Work on radio and transmission towers, and smoke stacks: +25% of the Total Rate.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM): 8 hrs. pay for 7.5 hrs. work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM): 8 hrs. pay for 7 hrs. work + an additional 15% of the regular rate, per hour, inclusive of benefits.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceding Friday. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Electrician-Utility Work (North) **PREVAILING WAGE RATE**

Rates are located in the "Statewide" rate package

Craft: Electrician-Utility Work (North) **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
* 6 Months	60%	65%	70%	75%	80%	85%	90%			
Benefits	69% of	Appren	tice	Wage	Rate	for all	intervals			

Craft: Electrician-Utility Work (North) **COMMENTS/NOTES**

Electrician-Utility Work (North) rates are located in the "Statewide" rate package.

* The apprentice wage rate is paid at the percentage of the Journeyman Lineman wage rate located in the "Statewide" rate package.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Electrician-Utility Work (South) **PREVAILING WAGE RATE**

Rates are located in the "Statewide" rate package

Craft: Electrician-Utility Work (South) **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
6 Months	33.69	36.50	39.31	42.11	44.92	47.73	50.54			
Benefits	29.97	31.72	33.46	35.21	36.96	38.71	40.45			

Craft: Electrician-Utility Work (South) **COMMENTS/NOTES**

Electrician-Utility Work (South) rates are located in the "Statewide" rate package.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Elevator Constructor **PREVAILING WAGE RATE**

	01/01/25
Helper-Over 5 Years	W50.30 B44.05 T94.35
Helper-Under 5 Years	W50.30 B43.05 T93.35
Mechanic (Journeyman) over 5 years	W71.85 B45.78 T117.63
Mechanic (Journeyman) under 5 years	W71.85 B44.37 T116.22
Mechanic in Charge (Foreman) over 5 years	W80.83 B46.50 T127.33
Mechanic in Charge (Foreman) under 5 years	W80.83 B44.88 T125.71
Probationary Helper (1st 6 months)	W35.93 B42.19 T78.12

Craft: Elevator Constructor **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	55%	65%	70%	80%						
Benefits	full	journeyman	benefit	rate for	all	intervals				

Ratio of Apprentices to Journeymen - *

* Total number of helpers and apprentices shall not exceed the number of mechanics on the job , except where 2 teams are working, 1 additional helper or apprentice may be employed for first 2 teams and an extra helper or apprentice for each additional 3 teams. Further, the employer may use as many helpers or apprentices as needed, under the direction of a mechanic in wrecking of old plants, handling and hoisting material, and on foundation work. When replacing cables on existing elevators, employer may use 2 helpers or apprentices to 1 mechanic.

Craft: Elevator Constructor **COMMENTS/NOTES**

SHIFT DIFFERENTIALS:
- 2nd Shift (4:30 PM to 12:30 AM) shall be established on the basis of 7.5 hours of work for 8 hours of pay, plus an additional 10% per hour.
- 3rd Shift (12:30 AM to 8:00 AM) shall be established on the basis of 7 hours of work for 8 hours of pay, plus an additional 15% per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays, Sundays, and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday to Thursday or Tuesday to Friday, at straight time. When working a 4-10 hour day schedule, all hours worked on a day other than the days established for the 4-10 hour schedule shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and day after, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Glazier **PREVAILING WAGE RATE**

	05/01/25
* Leadman	W54.68 B33.23 T87.91
Foreman	W56.68 B33.47 T90.15
General Foreman	W58.68 B33.71 T92.39
Journeyman	W52.68 B32.99 T85.67

Craft: Glazier **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	46%	46%	55%	55%	61%	61%	70%	70%		
Benefits	13.67	13.67	15.45	15.45	18.92	18.92	20.65	20.65		

Ratio of Apprentices to Journeymen - 1:4

Craft: Glazier **COMMENTS/NOTES**

Hazard/Height Pay: +$1.00 per hour

* When there are three (3) men working on a jobsite for three (3) days or longer, 1 Journeyman may be designated as a Leadman for the duration of the job, provided he has his OSHA certification.

FOREMAN REQUIREMENTS:
- When there are 4 or more Glaziers on a job, 1 must be designated a Foreman.
- When there are 15 or more Glaziers on a job, 1 must be designated a General Foreman.

The regular workday shall consist of 8 hours, between 7:00 AM and 5:30 PM, Monday to Friday.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, and the third shift shall receive 8 hours pay for 7 hours of work.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular

rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, General Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Heat & Frost Insulator **PREVAILING WAGE RATE**

	07/01/25
Foreman	W57.30 B40.95 T98.25
Journeyman	W55.80 B40.95 T96.75

Craft: Heat & Frost Insulator **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	45%	55%	65%	75%	80%					
Benefit	37.20	for	all	intervals						

Ratio of Apprentices to Journeymen - *

* Ratio = 1:4 on a "company-wide" basis (i.e. the total number of apprentices and journeymen employed by the company).
There is no limit to the number of apprentices allowed on any one job, provided there is at least 1 journeyman on the job.

Craft: Heat & Frost Insulator **COMMENTS/NOTES**

FOREMAN REQUIREMENTS:
- If there is only 1 Insulator on the job, he must be designated a Foreman.
- If there are 2 to 10 Insulators on the job, 1 must be designated a Foreman.
- If there are 11 or more Insulators on the job, 1 must be designated a General Foreman and receive the following additional pay (% above Journeyman wage rate):
  11 - 20 Insulators on site: 10%; 21 - 30 Insulators on site: 15%;
  31 - 40 Insulators on site: 20%; 41 - 50 Insulators on site: 25%

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of two (2) consecutive days and a minimum of two (2) shifts per day must be worked. Additionally, no less than two (2) employees may work on any one (1) shift. If these requirements are not met then shift work would not apply and the applicable overtime rate shall be paid.
- 1st Shift- Monday through Friday (7:00 AM- 3:00 PM).
- 2nd Shift- Monday through Friday (3:00 PM - 11:00 PM): additional 15% of the regular rate, inclusive of benefits.
- 3rd Shift- Monday through Friday (11:00 PM - 7:00 AM): additional 20% of the regular rate, inclusive of benefits.
- When a single night shift is established by the project owner for work not accessible during the day (due to the building being occupied), Monday through Friday, work performed during a second shift (3:00 PM-11:00 PM) shall be paid an additional 20% of the regular rate, inclusive of benefits, and work performed during a third shift (11:00 PM-7:00 AM) shall be paid an additional 25% of the regular rate, inclusive of benefits.

OVERTIME:
- Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, that are not shift work, and all hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays (except Labor Day) shall be paid at double the regular rate, inclusive of benefits. All hours on Labor Day shall be paid at triple the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Veteran's Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Heat & Frost Insulator - Asbestos Worker **PREVAILING WAGE RATE**

	07/01/25
Foreman	W57.30 B40.95 T98.25
Journeyman	W55.80 B40.95 T96.75

Craft: Heat & Frost Insulator - Asbestos Worker **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
	SEE	Heat &	Frost	Insulator						

Craft: Heat & Frost Insulator - Asbestos Worker **COMMENTS/NOTES**

NOTE: These rates apply only to the REMOVAL of insulation materials/asbestos from mechanical systems, including containment erection and demolition, and placing material in appropriate containers.

FOREMAN REQUIREMENTS:
- If there is only 1 Asbestos Worker on the job, he must be designated an Abatement Foreman.
- If there are 2 to 10 Asbestos Workers on the job, 1 must be designated an Abatement Foreman.
- If there are 11 or more Asbestos Workers on the job, 1 must be designated a General Foreman and receive the following additional pay (% above Abatement Mechanic wage rate):

11 - 20 Insulators on site: 10%; 21 - 30 Insulators on site: 15%;
31 - 40 Insulators on site: 20%; 41 - 50 Insulators on site: 25%

MECHANIC-TO-APPRENTICE RATIO:
- Maximum of 5 Apprentices for each Abatement Mechanic on the job.

OVERTIME:
- Hours in excess of 8 per day, and all hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays (except Labor Day) shall be paid at double the regular rate, inclusive of benefits. All hours on Labor Day shall be paid at triple the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Veteran's Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Industrial Painter- Bridges **PREVAILING WAGE RATE**

	02/07/25	02/01/26
Foreman	W64.80 B37.40 T102.20	W0.00 B0.00 T104.20
General Foreman	W67.30 B37.40 T104.70	W0.00 B0.00 T106.70
Journeyman	W59.80 B37.40 T97.20	W0.00 B0.00 T99.20

Craft: Industrial Painter- Bridges **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	50%	70%	90%							
Benefits	14.62	21.61	28.11							

Ratio of Apprentices to Journeymen - 1:3

Craft: Industrial Painter- Bridges **COMMENTS/NOTES**

* Industrial Painters perform work on all industrial structures, such as bridges.

These rates apply to: All bridges that span waterways, roadways, railways and canyons. All tunnels, overpasses, viaducts and all appurtenances.

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate, except Veterans Day, which shall be paid at time and one-half the regular rate.
- During a regular work week schedule, Saturday may be used as a make-up day lost to inclement weather, paid at the regular rate.
- Four 10-hour days may be worked, at the regular rate, Monday through Thursday. When the four 10-hour day schedule is used, the 11th and 12th hours shall be paid at time and one-half the regular rate. After the 12th hour, a worker shall be paid at double the regular rate. Friday may be used as a make-up day lost to inclement weather, paid at the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Industrial Painter- Structural Steel **PREVAILING WAGE RATE**

	02/07/25	02/01/26
Foreman	W53.54 B35.05 T88.59	W0.00 B0.00 T90.59
General Foreman	W56.04 B35.05 T91.09	W0.00 B0.00 T93.09
Journeyman	W48.54 B35.05 T83.59	W0.00 B0.00 T85.59

Craft: Industrial Painter- Structural Steel **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
	SEE	INDUST	RIAL	PAINTER	BRIDGES					

Ratio of Apprentices to Journeymen - 1:3

Craft: Industrial Painter- Structural Steel **COMMENTS/NOTES**

* Industrial Painters perform work on all industrial structures, such as water tanks, waste water facilitites, refineries, any structural steel work, etc.

These rates apply to: All work in power plants (any aspect). On steeples, on dams, on hangers, transformers, substations, on all open steel, in refineries, tank farms, water/sewerage treatment facilities and on pipelines.

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate, except for Veterans Day, which shall be paid at time and one-half the regular rate.
- During the regular work week schedule, Saturday may be used to make-up a day lost to inclement weather, paid at the regular rate.
- Four 10-hour days may be worked, at the regular rate, Monday through Thursday. When the four 10-hour day schedule is used, the 11th and 12th hours shall be paid at time and one-half the regular rate. After the 12th hour, a worker shall be paid at double the regular rate. Friday may be used as a make-up day lost to inclement weather, paid at the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Industrial Painter- Water Tanks **PREVAILING WAGE RATE**

	02/07/25	02/01/26
Foreman	W54.59 B34.70 T89.29	W0.00 B0.00 T91.29
General Foreman	W57.09 B34.70 T91.79	W0.00 B0.00 T93.79
Journeyman	W49.59 B34.70 T84.29	W0.00 B0.00 T86.29

Craft: Industrial Painter- Water Tanks **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	50%	70%	90%							
Benefits	14.62	21.61	28.11							

Ratio of Apprentices to Journeymen - 1:3

Craft: Industrial Painter- Water Tanks **COMMENTS/NOTES**

* Industrial Painters perform work on all industrial structures, such as water tanks, waste water facilitites, refineries, any structural steel work, etc.

These rates apply to: All new and repaint water tanks (interior and exterior).

FOREMEN REQUIREMENTS:
- When there are 4 or more Painters on a job, 1 shall be designated a Foreman.
- When there are 15 or more Painters on a job, 1 shall be designated a General Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays and Sundays shall be paid at time and one-half the regular rate. All hours on holidays shall be paid at double the regular rate, except Veterans Day, which shall be paid at time and one-half the regular rate.
- During a regular work week schedule, Saturday may be used to make-up a day lost to inclement weather, paid at the regular rate.
- Four 10-hour days may be worked, at the regular rate, Monday through Thursday. When the four 10-hour day schedule is used, the 11th and 12th hours shall be paid at time and one-half the regular rate. After the 12th hour, a worker shall be paid at double the regular rate. Friday may be used as a make-up day lost to inclement weather, paid at the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Saturday holiday observed the preceding Friday. Sunday holiday observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Ironworker **PREVAILING WAGE RATE**

	07/01/25
Rod /Fence Foreman	W54.94 B51.87 T106.81
Rod/Fence Journeyman	W49.94 B51.87 T101.81
Structural Foreman	W57.47 B51.87 T109.34
Structural Journeyman	W52.24 B51.87 T104.11

Craft: Ironworker **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	50%	60%		Yearly	70%	80%	90%			
Benefits	same as	journeyman	amount							

Ratio of Apprentices to Journeymen - 1:4

Craft: Ironworker **COMMENTS/NOTES**

HAZARDOUS WASTE WORK: On hazardous waste removal work on a state or federally designated hazardous waste site where the Ironworker is required to wear Level A,B, or C personal protection: + $3.00 per hour

The regular workday consists of 8 hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:
When there are 2 or more Ironworkers on a job, 1 shall be designated a Foreman.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule is established, the first, or day shift , shall be established on an 8 hour basis .The second shift shall be established on an 8 hour basis, and receive the regular rate plus 15%.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 15%, and the third shift shall receive the regular rate plus 20%.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis.
- When an irregular shift is established for four days or less (unless working a four 10-day day shift) on all projects bid after July 1, 2024, that shift shall be paid time and one-half the regular rate, inclusive of benefits. However, when an irregular shift is established at five 8-hour days or more the shift premium shall be 15% above the regular rate. When an irregular shift is established at four 10-hour days or more the shift premium shall be 15% above the regular rate. When an irregular shift extends into Saturday, time and one-half shall be paid on the regular rate, inclusive of benefits, beginning at

midnight (12:00 am) for the duration of the shift. A Sunday shift that extends into Monday shall be paid at double the regular rate, inclusive of benefits, until 12:00 am on Monday, at which time the 15% shift differential will apply to the regular rate.

OVERTIME:
- All hours in excess of 8 per day, or before or after an established shift that are not shift work, and all hours on Saturday, shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the hourly rate, inclusive of benefits. Saturday may be used as a make-up day for a day lost to inclement weather. If Saturday is not a make-up day, all hours on Saturday shall be paid at time and one-half the hourly rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Laborer - Asbestos & Hazardous Waste Removal **PREVAILING WAGE RATE**

	08/01/25
Foreman	W46.44 B26.21 T72.65
Journeyman (Handler)	W41.28 B26.21 T67.49

Craft: Laborer - Asbestos & Hazardous Waste Removal **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	22.47	28.55	32.62	36.70						
Benefit	22.31	for	all	intervals						

Ratio of Apprentices to Journeymen - *

* Ratio of apprentices to journeymen shall not be more than one apprentice for the first journeyman and no more than one (1) apprentice for each additional three (3) journeymen.

Craft: Laborer - Asbestos & Hazardous Waste Removal **COMMENTS/NOTES**

NOTE: These rates apply to work in connection with Asbestos, Radiation, Hazardous Waste, Lead, Chemical, Biological, Mold Remediation and Abatement.

The regular workday shall be 8 hours.

OVERTIME:
- Hours in excess of 8 per day, Monday through Saturday, and all hours on Sunday and holidays shall be paid at time and one-half the regular rate.
- Benefits on ALL overtime hours shall be paid at straight time.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Easter, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. (Holidays start at 12:00 am).

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Laborer - Building **PREVAILING WAGE RATE**

	06/18/25
Class A Journeyman	W40.25 B33.87 T74.12
Class B Journeyman	W39.25 B33.87 T73.12
Class C Journeyman	W33.36 B33.87 T67.23
Foreman	W45.28 B33.87 T79.15
General Foreman	W50.31 B33.87 T84.18

Craft: Laborer - Building **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	60%	70%	80%	90%	of Class B	wage rate				
Benefit	30.62	30.62	30.62	30.62						

Ratio of Apprentices to Journeymen - *

* Ratio of apprentices to journeymen shall not be more than one apprentice for the first journeyman and no more than one (1) apprentice for each additional three (3) journeymen.

Craft: Laborer - Building **COMMENTS/NOTES**

CLASS A: Specialist laborer including mason tender or concrete pour crew; scaffold builder (scaffolds up to 14 feet in height); operator of forklifts, Bobcats (or equivalent machinery), jack hammers, tampers, motorized tampers and compactors, vibrators, street cleaning machines, hydro demolition equipment, riding motor buggies, conveyors, burners; and nozzlemen on gunite work.
CLASS B: Basic laborer - includes all laborer work not listed in Class A or Class C.
CLASS C: Janitorial-type light clean-up work associated with the TURNOVER of a project, or part of a project, to the owner. All other clean-up work is Class B.

The regular workday shall be 8 hours between 6:00 AM and 6:00 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of 5 consecutive workdays.
- When a 2-shift schedule is worked, including a day shift, both shifts shall be established on the basis of 8 hours pay for 8 hours worked. The second shift shall receive the regular rate plus an additional 10%.
- When a 3-shift schedule is worked, the day shift shall be established on the basis of 8 hours pay for 8 hours worked, the second shift shall be established on the basis of 8 hours pay for 7.5 hours worked, and the third shift shall be established

on the basis of 8 hours pay for 7 hours worked. The day shift shall receive the regular rate, the second shift shall receive the regular rate plus an additional 10%, and the third shift shall receive the regular rate plus an additional 15%.
- When a second or third shift is worked with no day shift, the second or third shift shall be established on the basis of 8 hours pay for 8 hours worked. The second shift shall receive the regular rate plus an additional 10%, and the third shift shall receive the regular rate plus an additional 15%.
- When an irregular shift must be established this shift shall receive the regular rate plus an additional 10%.

OVERTIME:
- Hours in excess of 8 per day, or outside the regular workday that are not shift work, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. Saturday may be used as a make-up day (paid at straight time) for a day lost to inclement weather, or for a holiday that is observed during the work week, Monday through Friday. All hours on Sundays and holidays shall be paid at double the regular rate.
- Four 10-hour days may be worked Monday to Thursday, at straight time, with Friday used a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the regular rate.
- Benefits on ALL overtime hours shall be paid at time and one-half.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Laborer - Heavy & General **PREVAILING WAGE RATE**

Rates are located in the
"Statewide" rate package

Craft: Laborer - Heavy & General **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1000 Hours	60%	70%	80%	90%						
Benefit	25.08	for	all	intervals						

Ratio of Apprentices to Journeymen - *

* No more than 1 apprentice for the first journeyman and no more than 1 apprentice for each additional 3 journeymen.

As of 3-1-25, benefits shall be 26.13.
As of 3-1-26, benefits shall be 27.13.

Craft: Laborer - Heavy & General **COMMENTS/NOTES**

Heavy & General Laborer rates are located in the "Statewide" rate package.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Laborer-Residential and Modular Construction **PREVAILING WAGE RATE**

	04/01/25	04/01/26	04/01/27
* Skilled Tradesman (only applies to Modular Construction)	W36.00 B5.45 T41.45	W36.50 B5.45 T41.95	W37.00 B5.45 T42.45
Foreman (person directing crew, regardless of his skill classification)	W38.00 B5.45 T43.45	W38.50 B5.45 T43.95	W39.00 B5.45 T44.45
Residential and Modular Construction Laborer	W32.00 B5.45 T37.45	W32.50 B5.45 T37.95	W33.00 B5.45 T38.45

Craft: Laborer-Residential and Modular Construction **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
As shown	800 hours	600 hours	600 hours							
wage & benefits	70%	80%	90%							

Ratio of Apprentices to Journeymen-

One (1) apprentice shall be allowed for the first journeyman on site and no more than one (1) additional apprentice for each additional three (3) journeymen on site.

Craft: Laborer-Residential and Modular Construction **COMMENTS/NOTES**

* SKILLED TRADESMAN-
any worker doing work not typically done by a Building Laborer. Some examples are installing interior doors, sheet rock, hooking up appliances, installing light fixtures, installing railing systems, etc. Please note where local building codes require that certain work be performed under the supervision of a licensed tradesman (i.e. Plumber, Electrician, etc.) Laborers shall work under such supervision.

RESIDENTIAL CONSTRUCTION- All residential construction (not commercial), single-family, stand-alone duplex houses, townhouses and multi-family buildings of not more than four (4) floors. Each housing unit must be fully and independently functional; each housing unit must have its own kitchen and bathroom. The definition includes all incidental items such as site work, parking areas, utilities, streets and sidewalks. Please note the construction must be Residential in nature. A First Floor at or below grade may contain commercial space not to exceed 50% square footage of the floor; at least 50% of the First Floor must contain living accommodations or related nonresidential uses (e.g. laundry space, recreation/hobby rooms, and/or corridor space). Basement stories below grade used for storage, parking, mechanical systems/equipment, etc., are considered basement stories which are not used in determining the building's height. An attic is an unfinished space located immediately below the roof. Such space is not used in determining a building's height even if used for storage purposes. In addition, barracks and dormitories are not considered residential projects.

MODULAR RESIDENTIAL CONSTRUCTION- all aspects of modular residential construction (not commercial) at the site of installation of structures of no more than four (4) stories, including all excavation and site preparation, footings and foundation systems whether poured on-site or prefabricated, all underground waterproofing, underground utilities, concrete slabs, sidewalks, driveways, paving, hardscape and landscaping. Please note the construction must be Residential as defined above. All work performed by the Set Crew (the crew of workers who set the modular boxes on the foundation), including the rigging, setting, attaching and assembly of all modules and structural members, preparation of the foundation

to accept modules, such as sill plates, connection of all in-module and under-module connections including, but not limited to, plumbing, electrical, HVAC, fire suppression, CAT5, telephone, television/internet, and fiber optic, the building or installation of any porches or decks regardless of material or method of construction, the on-site installation of, or completion of any roof system, doors, windows and fenestrations, including flashing, gutter and soffit systems, waterproofing, insulation and interior and exterior trim work, and painting. Please note that modular construction does not include on-site stick built construction, tip up construction or panel built construction.

The regular workday shall be 8 hours between 6:00 AM and 6:00 PM.

OVERTIME:
Hours worked in excess of 8 per day/40 per week, Monday through Saturday, and all hours worked on Sunday and holidays shall be paid at time and one-half the hourly rate.

RECOGNIZED HOILDAYS:
New Year's Day, Martin Luther King Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Millwright **PREVAILING WAGE RATE**

	05/01/25
Foreman	W67.67 B40.72 T108.39
Journeyman	W58.84 B35.49 T94.33

Craft: Millwright **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
6 Months	40%	55%	65%	80%	90%					
Benefits	59.25% of	Appren	tice	Wage	Rate	for all	intervals	+ $0.63		

Ratio of Apprentices to Journeymen - 1:3

Craft: Millwright **COMMENTS/NOTES**

FOREMAN REQUIREMENTS:
- When there are 2 or more Millwrights on a job, 1 shall be designated as a Foreman.

The regular workday shall consist of 8 hours, starting between 6:00 AM and 9:00 AM.

SHIFT DIFFERENTIALS:
- When a 2 shift schedule (including a day shift) is established, the day shift shall be established on an 8 hour basis. The second shift shall be established on an 8 hour basis, and receive the regular rate plus 15%, inclusive of benefits.
- When a three shift schedule is established, the first shift shall be established on an 8 hour basis, the second shift on a 7.5 hour basis, and the third shift on a 7 hour basis. The first shift shall receive the regular hourly rate, the second shift shall receive the regular rate plus 15% and the third shift shall receive the regular rate plus 20%, inclusive of benefits.
- When there is no day shift, and a second or third shift is established, it shall be established on an 8 hour basis. The second shift shall receive the regular rate plus 15% and the third shift shall receive the regular rate plus 20%, inclusive of benefits.
- When an irregular shift must be established, this shift shall receive the regular rate plus 15%, inclusive of benefits.

OVERTIME:
- All hours in excess of 8 per day, or before or after an established shift that are not shift work, and all hours on Saturdays shall be paid at time and one-half the hourly rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday to Thursday, at straight time. Friday may be used as a make-up day for a day lost due to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. Veterans' Day may be substituted for the day after Thanksgiving.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Operating Engineer **PREVAILING WAGE RATE**

Rates are located in the
"Statewide" rate package

Craft: Operating Engineer **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	60%	70%	80%	90%						

Ratio of Apprentices to Journeymen - *

* 1 apprentice for each piece of heavy equipment. At least 10 pieces of heavy equipment or a minimum of 5 Operating Engineers must be on site.

Craft: Operating Engineer **COMMENTS/NOTES**

Operating Engineer rates are located in the "Statewide" rate package.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Operating Engineer - Field Engineer **PREVAILING WAGE RATE**

Rates are located in the
"Statewide" rate package

Craft: Operating Engineer - Field Engineer **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	80%	75%	of Rod/	Chainman	Wage					
Yearly			80%	90%	Transit/	Instrument	man	Wage		

Ratio of Apprentices to Journeymen - *

* No more than 1 Field Engineer Apprentice per Survey Crew.

Craft: Operating Engineer - Field Engineer **COMMENTS/NOTES**

Operating Engineer - Field Engineer rates are located in the "Statewide" rate package.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Painter - Line Striping **PREVAILING WAGE RATE**

	12/03/24
Apprentice (1st year)	W31.33 B16.18 T47.51
Apprentice (2nd year)	W35.74 B27.13 T62.87
Foreman (Charge Person)	W45.12 B27.91 T73.03
Journeyman 1 (at least 1 year of working exp. as a journeyman)	W40.35 B27.91 T68.26
Journeyman 2 (at least 2 years of working exp. as a journeyman)	W44.12 B27.91 T72.03

Craft: Painter - Line Striping **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									

Ratio of Apprentices to Journeymen - 1:1

Craft: Painter - Line Striping **COMMENTS/NOTES**

OVERTIME:
Hours in excess of 8 per day, Monday through Saturday, and all hours on Sundays and holidays shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day and Christmas Day. Veterans Day may be substituted for the day after Thanksgiving.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Paperhanger **PREVAILING WAGE RATE**

	05/01/25
Foreman	W55.12 B31.61 T86.73
Journeyman	W50.11 B31.61 T81.72

Craft: Paperhanger **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
	SEE	COMMER	CIAL	PAINTER						

Craft: Paperhanger **COMMENTS/NOTES**

FOREMEN REQUIREMENTS:
- When there are 4 or more Paperhangers on a job, 1 shall be designated a Foreman.

The regular workday shall consist of 8 hours between 7:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- The second shift shall receive an additional 10% of the hourly rate, per hour, and the third shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Saturday or Sunday may be used to make up a day lost to inclement weather, at straight time.
- Four 10-hour days may be worked, at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, General Election Day, Veterans Day, Thanksgiving Day, Christmas Day

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Pipefitter **PREVAILING WAGE RATE**

.

Craft: Pipefitter **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									

Ratio of Apprentices to Journeymen - 1:4

Craft: Pipefitter **COMMENTS/NOTES**

See PLUMBERS Rates

County - OCEAN

Craft: Plasterer **PREVAILING WAGE RATE**

See "Cement Mason" Rates

Craft: Plasterer **COMMENTS/NOTES**

See CEMENT MASON Rates

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Plumber **PREVAILING WAGE RATE**

	07/01/25
Assistant General Foreman	W64.93 B46.80 T111.73
Foreman	W64.34 B46.80 T111.14
General Foreman	W67.91 B46.80 T114.71
Journeyman	W59.57 B46.80 T106.37

Craft: Plumber **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	35%	45%	55%	65%	75%					
Benefits	29.33	32.02	34.70	37.39	40.08					

Ratio of Apprentices to Journeymen - 1:4

Craft: Plumber **COMMENTS/NOTES**

The regular workday shall consist of 8 hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS (number of Plumbers on site):
- (1 to 8)- 1 Foreman
- (9 to 16)- 1 Foreman and 1 Assistant General Foreman
- (17 to 40)- 1 Foreman for every (1 to 8 Plumbers) and 1 Assistant General Foreman every (1 to 5 gangs). One note, a "gang" is a group of 8 men.
- (41 and more)- 1 Foreman for every (1 to 8 Plumbers), 1 Asssistant General Foreman for every (1 to 5 gangs) and 1 General Foreman. One note, for every additional Assistant General Foreman over five designated, the General Foreman shall receive an additional 10 cents per hour.

SHIFT DIFFERENTIALS:
-The second shift shall work 7.5 hours and receive 8 hours pay, at a rate equal to the hourly rate plus 25%, inclusive of benefits.
- When a third shift is worked, the third shift shall work 7.5 hours and receive 8 hours pay, at a rate equal to the hourly rate plus 30%, inclusive of benefits.
- A second shift may be established without a first shift, provided the second shift starts at 1:00 PM or later.

OVERTIME:
- Hours in excess of 8 per day, or before of after the regular workday, Monday through Friday, that are not shift work, and the first 10 hours on Saturdays, shall be paid at time and one-half, inclusive of benefits. Hours in excess of 10 on

Saturdays, and all hours on Sundays and holidays, shall be paid at double time, inclusive of benefits.
- Four 10-hour days may be worked, Mon to Thurs, at straight time, with Friday used as a make-up day for a day lost due to inclement weather. If Fri. is not a make-up day, the first 10 hours shall be paid at time and one-half, and hours in excess of 10 at double time, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Roofer **PREVAILING WAGE RATE**

	05/08/25
Foreman (5 workers or less)	W48.03 B34.77 T82.80
Foreman (6 workers or more)	W48.53 B34.77 T83.30
Journeyman	W46.03 B34.77 T80.80

Craft: Roofer **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
Yearly	55%	60%	65%	75%						
Benefits	23.39	28.04	34.77	34.77						

Ratio of Apprentices to Journeymen - *

* 1:2, 2:4, 3:6, 4:8, 5:10, 6:12, 7:14

Craft: Roofer **COMMENTS/NOTES**

NOTE: Mopper, Operator of Felt Laying Machine or Slag Dispenser shall receive an additional $.50 per hour.

FOREMAN REQUIREMENTS:
- There must be a Foreman on all jobs.
- Foreman rate depends on the number of Roofers on the job, as indicated.

The regular workday is 8 hours between 5:00 AM and 4:30 PM.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, and all hours on Saturdays , Sundays, and holidays shall be paid at time and one-half the wage rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Roofer - Shingle, Slate & Tile **PREVAILING WAGE RATE**

	05/08/25
Foreman (3 workers or less)	W36.45 B22.20 T58.65
Foreman (4 workers or more)	W36.95 B22.20 T59.15
Helper	W17.98 B22.20 T40.18
Journeyman (shingle work)	W35.95 B22.20 T58.15

Craft: Roofer - Shingle, Slate & Tile **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
Yearly	60%	70%	80%							
Benefits	22.20	22.20	22.20							

Ratio of Apprentices to Journeymen - *

* 1:2, 2:4, 3:6, 4:8, 5:10, 6:12, 7:14

Craft: Roofer - Shingle, Slate & Tile **COMMENTS/NOTES**

NOTE: Above rates are for Shingle work only. Slate and Tile work rates are an additional $3.00 per hour.

HELPER RATIO: 1 Helper to 1 Journeyman

FOREMAN REQUIREMENTS:
- There must be a Foreman on all jobs.
- Foreman rate depends on the number of Roofers on the job, as indicated.

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays, Sundays, and holidays shall be paid at time and one-half the wage rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Sheet Metal Sign Installation **PREVAILING WAGE RATE**

	04/03/25
Foreman	W46.50 B46.30 T92.80
Journeyman	W43.50 B46.30 T89.80

Craft: Sheet Metal Sign Installation **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
1000 hours	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%
Benefits	15.35	17.52	19.67	21.83	24.51	26.71	28.93	31.12	33.34	35.53

Ratio of Apprentices to Journeymen - 1:3

Craft: Sheet Metal Sign Installation **COMMENTS/NOTES**

FOREMAN REQUIREMENT:
When there are 6 or more Sheet Metal Sign Installers on a job, 1 shall be designated a Foreman.

The regular workday consists of 8 hours, between 7:00 AM and 3:30 PM.

OVERTIME:
Hours before or after the regular workday, Monday though Friday, and all hours worked on Saturday shall be paid at time and one-half the hourly rate. All hours on Sunday and holidays shall be paid at double the hourly rate.

Four(4) 10 hour days may be worked, Monday through Friday, at straight time, for projects lasting at least one week in duration. The fifth day may be used as a make-up day at straight time for a day lost due to inclement weather. However, if the fifth day is not a make-up day, all hours worked will be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Saturday holidays observed the preceding Friday, Sunday holidays observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Sheet Metal Worker **PREVAILING WAGE RATE**

	06/01/25
Foreman	W66.32 B48.33 T114.65
Journeyman	W62.27 B48.33 T110.60

Craft: Sheet Metal Worker **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
6 months	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%
Benefits	15.03	16.78	18.55	20.29	22.04	30.95	33.26	35.56	37.86	40.14

Ratio of Apprentices to Journeymen- 1:3, except for the following types of work where the ratio shall be 1:1 (architectural metal work, testing and balancing, lockers, shelving and toilet partitions).*
* For work performed in a fabrication shop, the ratio will be applied on a "company-wide" basis (i.e. the total number of apprentices and journeymen employed by the company).

.

Craft: Sheet Metal Worker **COMMENTS/NOTES**

JOB SITE FOREMAN REQUIREMENTS:
- When there are 2 to 9 Sheet Metal Workers on a jobsite, 1 must be designated a Foreman.
- When there are 10 to 16 Sheet Metal Workers on a job site, 2 must be designated Foremen.
- When there are 17 to 23 Sheet Metal Workers on a job site, 3 must be designated Foremen.
- For every 7 addtional Sheet Metal Workers on a job site, there shall be 1 additional Foreman.

SHOP FOREMAN REQUIREMNTS (For custom fabrication):
- When there are 1 to 10 Sheet Metal Workers in the shop, 1 must be designated a Foreman.
- For every 10 additional Sheet Metal Workers in the shop, 1 must be designated a Foreman.

The regular workday consists of 8 hours, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of 5 consecutive workdays.
- There must be a day shift worked in order to have a 2nd and/or 3rd Shift.
- Shop work does not satisfy shift requirements.
- 2nd Shift (4:30 PM-12:30 AM) shall be paid an additional 15% of the regular rate per hour inclusive of benefits, and receive 8 hours pay for 7.5 hours of work.
- 3rd Shift (12:30 AM-8:00 AM) shall be paid an additional 25% of the regular rate per hour inclusive of benefits, and receive 8 hours pay for 7 hours of work.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular workday, Monday through Friday, that are not shift work, and all

hours on Saturday, shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.
- Benefits on overtime hours are as follows:
Time and one-half = 55.77
Double-time = 63.22

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceding Friday, Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Sprinkler Fitter **PREVAILING WAGE RATE**

	06/13/23
Foreman	W55.19 B35.59 T90.78
General Foreman	W57.44 B35.59 T93.03
Journeyman	W52.19 B35.59 T87.78

Craft: Sprinkler Fitter **APPRENTICE RATE SCHEDULE**

INTERVAL	**PERIOD AND RATES**									
1000 Hours	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%
Benefits	8.74	8.74	20.32	20.32	20.57	20.57	20.57	20.57	20.57	20.57

Ratio of Apprentices to Journeymen - 1:1

Craft: Sprinkler Fitter **COMMENTS/NOTES**

FOREMAN REQUIREMENTS:
- There must be a Foreman on all projects. If there is only 1 Sprinkler Fitter on the project, he/she shall be designated a Foreman.
- On any job with 22 or more Sprinkler Fitters 1 shall be designated a General Foreman.

The regular workday consists of 8 hours, between 6:00 AM and 6:00 PM.

SHIFT DIFFERENTIALS:
- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd and/or 3rd shift shall receive an additional 15% of the hourly rate, per hour.

OVERTIME:
- Hours in excess of 8 per day, or before or after the regular workday that are not shift work, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked at straight time, Monday through Friday.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day. Saturday holidays will be observed the preceding Friday, Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Tile Worker **PREVAILING WAGE RATE**

	06/19/25
Finisher	W43.63 B32.12 T75.75
Setter	W52.31 B38.01 T90.32

Craft: Tile Worker **APPRENTICE RATE SCHEDULE**

INTERVAL	PERIOD AND RATES									
750 Hours	40%	45%	50%	55%	60%	65%	70%	75%	80%	90%

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Worker **COMMENTS/NOTES**

NOTE: These rates also apply to Terrazzo and Marble work.

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and the first 10 hours on Saturdays shall be paid at time and one half the regular rate, inclusive of benefits. Hours in excess of 10 on Saturdays, and all hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS:
New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day. Sunday holidays shall be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Truck Driver **PREVAILING WAGE RATE**

	05/06/25
Bucket, Utility, Pick-up, Fuel Delivery trucks	W48.63 B42.81 T91.44
Dump truck (single axle), Asphalt Distributor, Tack Spreader	W48.63 B42.81 T91.44
Euclid-type vehicles (large off-road equipment)	W48.78 B42.81 T91.59
Helper on Asphalt Distributor truck	W48.63 B42.81 T91.44
Low Boy Driver	W51.21 B42.81 T94.02
Slurry Seal, Seeding/Fertilizing/Mulching truck	W48.63 B42.81 T91.44
Straight 3-axle trucks, Dump Truck (3-axle), Dump Truck (tandem)	W48.68 B42.81 T91.49
Tractor-Trailer truck (all types)	W48.78 B42.81 T91.59
Vacuum or Vac-All truck (entire unit)	W48.63 B42.81 T91.44
Winch Trailer Driver	W48.88 B42.81 T91.69

Craft: Truck Driver **COMMENTS/NOTES**

Foreman: + $1.00 per hour. Overtime rate shall be increased accordingly.

HAZARDOUS WASTE REMOVAL WORK:
- On a hazardous waste site requiring Level A, B, or C personal protection for any worker: + $3.00 per hour.
- On a hazardous waste site not designated Level A, B, or C: + $1.00 per hour.

The regular workday consists of 8 hours starting between 6:00 AM and 8:00 AM.

SHIFT DIFFERENTIAL:

Any shift starting at a time other than 6:00 AM or 8:00 AM shall receive an additional $5.00 per hour.

BLENDED RATE:
- When a truck driver is performing work on site and also serving as a material delivery driver, the driver shall be paid a "blended rate" which shall be 80% of the above-listed wage rates, plus the full benefit rate. This rate shall be used when the driver "round robins" for a minimum of 6 hours during the work day.

OVERTIME:
- Hours in excess of 8 per day, or before or after the regular workday that are not shift work, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Benefits on overtime shall be $51.21.

- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day, Christmas Day. Veteran's Day may be substituted for the day after Thanksgiving. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Truck Driver-Material Delivery Driver **PREVAILING WAGE RATE**

	05/06/25
Driver	W38.90 B42.81 T81.71
New Hires: 1st Year	W38.90 B42.81 T81.71

Craft: Truck Driver-Material Delivery Driver **COMMENTS/NOTES**

NOTE: These rates may only be used for the delivery of *materials TO the job site (*building materials that will become a permanent part of the job site, such as sand, stone, aggregates, asphalt, sheetrock, 2x4's, etc.). In addition, only the following types of truck may be used for such deliveries (Dump Truck or Flat-bed truck). Please note that this rate does not apply to material suppliers or their employees (who do not perform services at the job site), and for the delivery of equipment and/or items that will not become a permanent part of the job site.

OVERTIME: Hours in excess of 8 per day, Monday through Friday, and all hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate. Benefits on overtime shall be $51.21.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day, Christmas Day. Veteran's Day may be substituted for the day after Thanksgiving. Sunday holidays will be observed the following Monday.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

County - OCEAN

Craft: Welder **PREVAILING WAGE RATE**

Welder

Craft: Welder **COMMENTS/NOTES**

Welders rate is the same as the craft to which the welding is incidental.

STATEWIDE RATES

TERRITORY

ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

OPERATING ENGINEERS **Rates Expiration Date :**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must be established for 5 consecutive workdays.
- Any work started outside of the allowed start time, 6:00 AM to 9:00 AM, except for * tidal work, shall be considered an irregular shift and paid at straight time, plus 15% for the first eight hours, inclusive of benefits.
- * FOR TIDAL WORK- a contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work), providing the eight hour shift is completed between the hours of 5:00 AM and 6:30 PM.
- All time worked in excess of an established shift (an established shift is a shift that is determined at the time of the bid) shall be paid at the applicable overtime rate. When a portion of an established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.
- When working with other trades who receive a higher irregular shift differential, these employees shall also receive the higher differential rate.

OVERTIME:
- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veterans Day.

For projects bid after April 1, 2020, on hazardous waste removal work of any kind, including a state or federally designated site, where the operating engineer is required to wear level A, B, or C personal protection, the operating engineer shall receive an hourly wage rate of his regular hourly wage plus $5.00 per hour.
- An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus $1.00 per hour.

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
60.13	40.40	100.53

CLASSIFICATIONS:

A-Frame

Backhoe (combination)

Boom Attachment on loaders (Except pipehook)

Boring & Drilling Machine

Brush Chopper, Brush Shredder, Tree Shredder, Tree Shearer

Bulldozer, finish grade

Cableway

Carryall

Concrete Pump

Concrete Pumping System (Pumpcrete & similar types)

Conveyor, 125 feet or longer

Drill Doctor (Duties include dust collector and maintenance)

Front End Loader (2 cu. yds. but less than 5 cu. yds.)

Grader, finish

Groove Cutting Machine (ride-on type)

Heater Planer

Hoist: Outside Material Tower Hoist (all types including steam, gas, diesel, electric, air hydraulic, single and double drum, concrete, brick shaft caisson, snorkle roof, and other similar types, Except Chicago-boom type) * receives an addtional $1.00 per hour on 100 ft. up to 199 ft. total height, and an additional $2.00 per hour on 200 ft. and over total height.

Hydraulic Crane (10 tons & under)

Hydraulic Dredge

Hydro-Axe

Hydro-Blaster

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
60.13	40.40	100.53

CLASSIFICATIONS:

Jack (screw, air hydraulic, power-operated unit, or console type, Except hand jack or pile load test type)

Log Skidder

Pan

Paver, concrete

Plate & Frame Filter Press

Pumpcrete (unit type)

Pumpcrete, Squeezecrete, or Concrete Pumping machine (regardless of size)

Scraper

Side Boom

Straddle Carrier (Ross and similar types)

Whiphammer

Winch Truck (hoisting)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
58.22	40.40	98.62

CLASSIFICATIONS:

Asphalt Curbing Machine

Asphalt Plant Engineer

Asphalt Spreader

Autograde Curb Trimmer & Sidewalk Shoulder Slipform (CMI & similar types)

Autograde Curecrete Machine (CMI & similar types)

Autograde Tube Finisher & Texturing Machine (CMI & similar types)

Bar Bending Machines (Power)

Batcher, Batching Plant, & Crusher [On Site]

Belt Conveyor System

Boom-Type Skimmer Machine

Bridge Deck Finisher

Bulldozer (all sizes)

Captain (Power Boats)

Car Dumper (railroad)

Compressor & Blower unit for loading/unloading of concrete, cement, fly ash, or similar type materials (used independently or truck-mounted)

Compressor (2 or 3 battery)

Concrete Breaking Machine

Concrete Cleaning/Decontamination Machine

Concrete Finishing Machine

Concrete Saw or Cutter (ride-on type)

Concrete Spreader (Hetzel, Rexomatic & similar types)

Concrete Vibrator

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
58.22	40.40	98.62

CLASSIFICATIONS:

Conveyors - under 125 feet

Crane Signalman

Crushing Machine

Directional Boring Machine

Ditching Machine - Small (Ditchwitch, Vermeer or similar types)

Dope Pot - Mechanical (with or without pump)

Dumpster

Elevator

Fireman

Fork Lift (Economobile, Lull & similar types)

Front End Loader (1 cu. yd. and over but less than 2 cu. yds.)

Generator (2 or 3 battery)

Giraffe Grinder

Goldhofer/Hydraulic Jacking Trailer

Grader & Motor Patrols

Grout Pump

Gunnite Machine (Excluding nozzle)

Hammer - Vibratory (in conjunction with generator)

Heavy Equipment Robotics - Operator/Technician

Hoist (roof, tugger, aerial platform hoist, house car)

Hopper

Hopper Doors (power operated)

Ladder (motorized)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
58.22	40.40	98.62

CLASSIFICATIONS:

Laddervator

Locomotive (Dinky-type)

Maintenance Utility Man

Master Environmental Maintenance Technician

Mechanic

Mixer (Except paving mixers)

Pavement Breaker (truck-mounted or small self-propelled ride-on type)

Pavement Breaker - maintenance of compressor or hydraulic unit

Pipe Bending Machine (power)

Pitch Pump

Plaster Pump (regardless of size)

Post Hole Digger (post pounder, auger)

Rod Bending Machines

Roller (black top)

Scale (power)

Seamen Pulverizing Mixer

Shoulder Widener

Silo

Skimmmer Machine (boom type)

Steel Cutting Machine (service & maintenance)

Tamrock Drill

Tractor

Transfer Machines

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
58.22	40.40	98.62

CLASSIFICATIONS:

Tug Captains

Tug Master (Power Boats)

Ultra High Pressure Waterjet Cutting Tool System - Operator/Maintenance Technician

Vacuum Blasting Machine - Operator/Maintenance Technician

Vibrating Plant (used with unloading)

Welder & Repair Mechanic

Effective Dates:

07/01/2025

Rate	Fringe	Total
52.88	40.40	93.28

CLASSIFICATIONS:

Assistant Engineer/Oiler

Driller's Helper

Field Engineer - Transit man or Instrument man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Mechanic's Helper

Off Road Back Dump

Tire Repair & Maintenance

Effective Dates:

07/01/2025

Rate	Fringe	Total
50.30	40.40	90.70

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
60.46	40.40	100.86

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (minimum)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
61.72	40.40	102.12

CLASSIFICATIONS:

Autograde Pavement Profiler (CMI & similar types)

Autograde Pavement Profiler - Recycle Type (CMI & similar types)

Autograde Placer/Trimmer/Spreader Combination (CMI & similar types)

Autograde Slipform Paver (CMI & similar types)

Backhoe (Excavator)

Central Power Plant

Concrete Paving Machine

Cranes, Derricks, Pile Drivers (all types), under 100 tons with a boom (including jib and/or leads) under 100 ft.

Draglines

Drill, Bauer, AMI and similar types

Drillmaster, Quarrymaster

Drillmaster/Quarrymaster (down-the-hole drill), rotary drill, self-propelled hydraulic drill, self-powered drill

Elevator Grader

Field Engineer-Chief of Party

Front End Loader (5 cu. yards or larger)

Gradall

Grader, Rago

Helicoptor Co-Pilot

Helicoptor Communications Engineer

Juntann Pile Driver

Locomotive (large)

Mucking Machine

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
61.72	40.40	102.12

CLASSIFICATIONS:

Pavement & Concrete Breaker (Superhammer & Hoe Ram)

Pile Driver

Prentice Truck

Roadway Surface Grinder

Scooper (loader & shovel)

Shovel (Excavator)

Trackhoe (Excavator)

Tree Chopper with boom

Trenching Machine (cable plow)

Tunnel Boring Machine

Vacuum Truck

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
56.59	40.40	96.99

CLASSIFICATIONS:

Chipper

Compressor (single)

Concrete Spreader (small type)

Conveyor Loader (Except elevator graders)

Engines, Large Diesel (1620 HP) & Staging Pump

Farm Tractor

Fertilizing Equipment (operation & maintenance)

Fine Grade Machine (small type)

Form Line Grader (small type)

Front End Loader (under 1 cubic yard)

Generator (single)

Grease, Gas, Fuel, & Oil Supply Trucks

Heaters (Nelson or other type)

Lights - portable generating light plant

Mixer, Concrete (small)

Mulching Equipment (operation & maintenance)

Power Broom or Sweeper

Pump (diesel engine & hydraulic - regardless of power)

Pump (larger than 2 inch suction, including submersible pumps)

Road Finishing Machine (small type)

Roller - grade, fill, or stone base

Seeding Equipment (operation & maintenance)

Sprinkler & Water Pump Trucks

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
56.59	40.40	96.99

CLASSIFICATIONS:

Steam Generator or Boiler

Stone Spreader

Tamping Machine (vibrating ride-on type)

Temporary Heating Plant (Nelson or other type, including proprane, natural gas, and flow-type units)

Water or Sprinkler Truck

Welding Machine (gas, diesel, or electric convertor, of any type)

Welding System - Multiple (rectifier transformer type)

Wellpoint Systems (including installation by bull gang and maintenance)

Effective Dates:

07/01/2025

Rate	Fringe	Total
63.54	40.40	103.94

CLASSIFICATIONS:

Helicoptor Pilot/Engineer

Effective Dates:

07/01/2025

Rate	Fringe	Total
68.22	40.40	108.62

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), 100 tons and over and TOWER CRANE with boom (including jib and/or leads) 140 ft. and over

Effective Dates:

07/01/2025

Rate	Fringe	Total
67.22	40.40	107.62

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), 100 tons and over and TOWER CRANE with boom (including jib and/or leads) from 100 ft. to 139 ft.

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
63.72	40.40	104.12

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types) , under 100 tons with a boom (including jib and/or leads) 140 ft. and over

Effective Dates:

07/01/2025

Rate	Fringe	Total
66.22	40.40	106.62

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), 100 tons and over and TOWER CRANE with a boom (including jib and/or leads) under 100 ft.

Effective Dates:

07/01/2025

Rate	Fringe	Total
62.72	40.40	103.12

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), under 100 tons with a boom (including jib and/or leads) from 100 ft. to 139 ft.

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must be established for 5 consecutive workdays.
- Any work started outside of the allowed start time, 6:00 AM to 9:00 AM, except for * tidal work, shall be considered an irregular shift and paid at straight time, plus 15% for the first eight hours, inclusive of benefits.
- * FOR TIDAL WORK- a contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work), providing the eight hour shift is completed between the hours of 5:00 AM and 6:30 PM.
- All time worked in excess of an established shift (an established shift is a shift that is determined at the time of the bid) shall be paid at the applicable overtime rate. When a portion of an established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.
- When working with other trades who receive a higher irregular shift differential, these employees shall also receive the higher differential rate.

OVERTIME:
- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veterans Day.

For projects bid after April 1, 2020, on hazardous waste removal work of any kind, including a state or federally designated site, where the operating engineer is required to wear level A, B, or C personal protection, the operating engineer shall receive an hourly wage rate of his regular hourly wage plus $5.00 per hour.
- An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus $1.00 per hour.

Effective Dates:

07/01/2025

Rate	Fringe	Total
65.35	40.40	105.75

CLASSIFICATIONS:

Helicopter Co-Pilot & Communications Engineer

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
61.29	40.40	101.69

CLASSIFICATIONS:

A-Frame

Cherry Picker -10 tons or less (Over 10 tons use crane rate)

Hoist (all types Except Chicago-boom)

Jack (screw, air hydraulic, power-operated unit or console type, Except hand jack or pile load test type)

Side Boom

Straddle Carrier

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
58.63	40.40	99.03

CLASSIFICATIONS:

Aerial Platform Used On Hoists

Apprentice Engineer/Oiler with Compressor or Welding Machine

Captain (Power Boats)

Compressor (2 or 3 in battery)

Concrete Cleaning/Decontamination Machine Operator

Conveyor or Tugger Hoist

Directional Boring Machine

Elevator or House Car

Fireman

Forklift

Generator (2 or 3)

Heavy Equipment Robotics, Operator/Technician

Maintenance Utility Man

Master Environmental Maintenance Technician

Tug Master (Power Boats)

Ultra High Pressure Waterjet Cutting Tool System Operator/Maintenance Technician

Vacuum Blasting Machine Operator/Maintenance Technician

Welding Machines, Gas or Electric Converters on any type-2 or 3 in battery including diesels

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
57.10	40.40	97.50

CLASSIFICATIONS:

Compressor (Single)

Generators

Welding Machines, Gas, Diesel, Or Electric Converters of any type-single

Welding System, Multiple (Rectifier Transformer Type)

Effective Dates:

07/01/2025

Rate	Fringe	Total
53.34	40.40	93.74

CLASSIFICATIONS:

Assistant Engineer/Oiler

Drillers Helper

Field Engineer - Transit/Instrument Man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Off Road Back Dump

Effective Dates:

07/01/2025

Rate	Fringe	Total
60.91	40.40	101.31

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (Minimum)

Effective Dates:

07/01/2025

Rate	Fringe	Total
50.30	40.40	90.70

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
62.05	40.40	102.45

CLASSIFICATIONS:

Field Engineer-Chief of Party

Vacuum Truck

Effective Dates:

07/01/2025

Rate	Fringe	Total
70.24	40.40	110.64

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms, including jib, 140 ft. and over, above ground). Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, 140 ft. and over, above ground), and Pile Drivers (all types) 100 tons and over and Tower Cranes.

Effective Dates:

07/01/2025

Rate	Fringe	Total
68.58	40.40	108.98

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. abovr ground), Derricks (all derricks. land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), 100 tons and over and Tower Crane.

Effective Dates:

07/01/2025

Rate	Fringe	Total
65.74	40.40	106.14

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, 140 ft. and over, above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, 140 ft. and over, above ground), Pile Drivers (all types), under 100 tons.

Effective Dates:

07/01/2025

Rate	Fringe	Total
64.08	40.40	104.48

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), under 100 tons.

STRUCTURAL STEEL ERECTION **Rates Expiration Date :**

Effective Dates:

07/01/2025

Rate	Fringe	Total
65.74	40.40	106.14

CLASSIFICATIONS:

Helicopter Pilot & Engineer

TEST BORING PRELIMINARY TO CONSTRUCTION-SOUTH/WEST **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Hunterdon, Mercer, Monmouth, Ocean, Salem, Sussex, Warren

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 5:30 PM.

SHIFT DIFFERENTIALS:
- Shift work must be established for 5 consecutive workdays.
- Any work started outside of the allowed start time, 6:00 AM to 9:00 AM, except for * tidal work, shall be considered an irregular shift and paid at straight time, plus 15% for the first eight hours, inclusive of benefits.
- * FOR TIDAL WORK- a contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work), providing the eight hour shift is completed between the hours of 5:00 AM and 6:30 PM.
- All time worked in excess of an established shift (an established shift is a shift that is determined at the time of the bid) shall be paid at the applicable overtime rate. When a portion of an established shift works into Saturday, Sunday or a holiday, that time worked shall be paid at the established shift rate.
- When working with other trades who receive a higher irregular shift differential, these employees shall also receive the higher differential rate.

OVERTIME:
- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sunday and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veterans Day.

For projects bid after April 1, 2020, on hazardous waste removal work of any kind, including a state or federally designated site, where the operating engineer is required to wear level A, B, or C personal protection, the operating engineer shall receive an hourly wage rate of his regular hourly wage plus $5.00 per hour.
- An operating engineer working at a hazardous waste removal project or site at a task requiring hazardous waste related certification, but who is not working in a zone requiring level A, B, or C personal protection, shall receive an hourly wage rate of his regular rate plus $1.00 per hour.

Effective Dates:

07/01/2025

Rate	Fringe	Total
61.72	40.40	102.12

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2025

Rate	Fringe	Total
54.88	40.40	95.28

CLASSIFICATIONS:

Driller's Helper

FREE AIR TUNNEL JOBS **Rates Expiration Date :**

{For apprentice rates refer to "Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:
- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional $3.00 per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:
-where Level A, B, or C protection is required: + $5.00/hr
-other Hazardous Waste site: + $1.00/hr

Traffic Control Coordinator: When either of the work classifications found below are working as a Traffic Control Coordinator they are to receive $.75 above their current rate of pay.

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
67.13	39.13	106.26	109.94

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
66.75	39.13	105.88	109.57

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrician Foreman, Rigging Foreman

FREE AIR TUNNEL JOBS **Rates Expiration Date :**

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
66.13	39.13	105.26	108.94

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Cleanup Foreman, Grout Foreman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
69.25	39.13	108.38	112.07

CLASSIFICATIONS:

Blaster

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
65.44	39.13	104.57	108.26

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
65.00	39.13	104.13	107.82

CLASSIFICATIONS:

Skilled Men (including Caulker, Powder Carrier, all other skilled men)

Skilled Men (including Miner, Drill Runner, Iron Man, Conveyor Man, Manitenance Man, Safety Miner, Rigger, Block Layer, Cement Finisher, Tod Man)

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
64.81	39.13	103.94	107.63

CLASSIFICATIONS:

Semi-Skilled Men (including Bell or Signal Man Top or Bottom, Form Worker & Mover, Concrete Worker, Shaft Man, Tunnel Laborer, Caulker's Helper, all other semi-skilled)

Semi-Skilled Men (including Miner's Helper, Chuck Tender, Track Man, Nipper, Brake Man, Derail Man, Cable Man, Hose Man, Gravel Man, Form Man)

FREE AIR TUNNEL JOBS **Rates Expiration Date :**

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
64.31	39.13	103.44	107.13

CLASSIFICATIONS:

All Others (including Powder Watchman, Change House Attendant, Top Laborer)

DRILL FOR GROUND WATER SUPPLY **Rates Expiration Date :**

The well driller and/or helper may perform all work relative to the construction, finishing, and servicing of wells, pumps and borings for ground water supply. The present methods of well drilling entailing as they do, many diverse job operations calling for drilling, pump discharge, piping, and the operation of various types of related power equipment, shall all be within the job duties and functions of the well driller and/or helper. In the event that an extension of work should occur beyond water well drilling functions, into the field of general construction work, such extension of work would come under the appropriate rates listed elsewhere in this wage determination.

- For Work Hours, Shift Differentials, Overtime Rates, and Recognized Holidays see the "Operating Engineers" section of this wage determination.

Effective Dates:

07/01/2025

Rate	Fringe	Total
60.47	40.40	100.87

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2025

Rate	Fringe	Total
53.63	40.40	94.03

CLASSIFICATIONS:

Driller's Helper

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date :**

NOTE: These wage rates only apply to dredging and other marine construction activities occurring in navigable waters and their tributaries.
Boat crews carrying explosive material (dynamite, pourfex, and other similar materials) shall be paid at 120% of the hourly wage rate for hours engaged in handling of said materials. Employees required to possess a Hazardous Material Certification as a condition of employment shall be compensated at 120% of the hourly wage rate.
OVERTIME:
Hours in excess of 40 per week, and all hours on Saturdays and Sundays, shall be paid at time and one-half the hourly rate. All hours on holidays shall be paid at double the hourly rate.
RECOGNIZED HOLIDAYS: New Year's Day, Martin Luther King Day, Good Friday, Memorial Day, July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
47.07	15.34	62.41	63.92	65.74

CLASSIFICATIONS:

Lead Dredgerman, Operator, Leverman

Licensed Tug Operator with MOTV, Deck Captain

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
40.71	14.90	55.61	56.92	58.47

CLASSIFICATIONS:

Derrick Operator, Spider/Spill Barge Operator

Engineer, Electrician, Chief Welder, Chief Mate

Fill Placer, Operator II

Licensed Boat Operator

Maintenance Engineer

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
38.31	14.73	53.04	54.27	55.75

CLASSIFICATIONS:

Certified Welder

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date :**

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
37.26	14.66	51.92	53.12	54.54

CLASSIFICATIONS:

Mate, Drag Barge Operator, Steward, Assistant Fill Placer

Welder

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
36.07	14.57	50.64	51.80	53.18

CLASSIFICATIONS:

Boat Operator

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
29.96	14.15	44.11	45.07	46.22

CLASSIFICATIONS:

Shoreman, Deckhand, Rodman, Scowman

Effective Dates:

10/03/2024			10/01/2025	10/01/2026
Rate	Fringe	Total	Total	Total
41.94	14.99	56.93	58.27	59.89

CLASSIFICATIONS:

Crane Operator

MICROSURFACING/SLURRY SEAL **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem
IN ALL OTHER COUNTIES use the Heavy and General Laborers - North "Slurry Seal Laborer" rates.

SHIFT DIFFERENTIALS:
Any shift starting at 3:30 PM or later shall receive an additional $0.35/hr

OVERTIME:
Hours in excess of 8 per day or 40 per week shall be paid at time and one-half the hourly rate. All hours on holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

Effective Dates:

08/26/2025			03/01/2026
Rate	Fringe	Total	Total
52.05	28.95	81.00	83.75

CLASSIFICATIONS:

Foreman

Effective Dates:

08/26/2025			03/01/2026
Rate	Fringe	Total	Total
50.10	28.95	79.05	81.80

CLASSIFICATIONS:

Box man, Hopper, CM Controller

Effective Dates:

08/26/2025			03/01/2026
Rate	Fringe	Total	Total
48.40	28.95	77.35	80.10

CLASSIFICATIONS:

Microsurface/Slurry Preparation

Effective Dates:

08/26/2025			03/01/2026
Rate	Fringe	Total	Total
49.05	28.95	78.00	80.75

CLASSIFICATIONS:

Squeegee man

MICROSURFACING/SLURRY SEAL **Rates Expiration Date :**

Effective Dates:

08/26/2025			03/01/2026
Rate	Fringe	Total	Total
46.95	28.95	75.90	78.65

CLASSIFICATIONS:

Cleaner, Taper

ASPHALT LABORERS - SOUTH **Rates Expiration Date :**

"THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem
{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}
The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.
SHIFT DIFFERENTIALS:
- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional $3.00 per hour.
OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.
RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.
Hazardous Waste Work:
-where Level A, B, or C protection is required: + $5.00/hr
-other Hazardous Waste site: + $1.00/hr
FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
55.20	39.13	94.33	97.58

CLASSIFICATIONS:

Paving Foreman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
51.75	39.13	90.88	94.13

CLASSIFICATIONS:

Head Raker

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
51.90	39.13	91.03	94.28

CLASSIFICATIONS:

Screedman

ASPHALT LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
51.35	39.13	90.48	93.73

CLASSIFICATIONS:

Tampers, Smoothers, Kettlemen, Painters, Shovelers, Roller Boys

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
51.45	39.13	90.58	93.83

CLASSIFICATIONS:

Milling Controller

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
51.65	39.13	90.78	94.03

CLASSIFICATIONS:

Traffic Control Coordinator

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
51.60	39.13	90.73	93.98

CLASSIFICATIONS:

Raker, Luteman

Effective Dates:

Rate	Fringe	Total

CLASSIFICATIONS:

Certified Paving Foreman

TEST BORING PRELIMINARY TO CONSTRUCTION-NORTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Bergen, Essex, Hudson, Middlesex, Morris, Passaic, Somerset, Union

SHIFT DIFFERENTIAL:
Employees on a shift other than between the hours of 8:00 AM and 5:00 PM shall receive an additional $2.00 per hour.

OVERTIME:
Hours in excess of 8 per day, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Hazardous Waste Pay (for Levels A, B, and C): an additional 15% of the hourly rate, per hour.

A newly hired Helper with no experience in the industry shall be paid as follows:
1st year on the job - 70% of Helper wage rate
2nd year on the job - 80% of Helper wage rate
3rd year on the job - 90% of Helper wage rate
All helpers receive full fringe benefit rate.

Effective Dates:

10/18/2024

Rate	Fringe	Total
37.58	34.49	72.07

CLASSIFICATIONS:

Helper (4th year helper)

Effective Dates:

10/18/2024

Rate	Fringe	Total
47.88	34.49	82.37

CLASSIFICATIONS:

Driller

Effective Dates:

10/18/2024

Rate	Fringe	Total
54.50	34.49	88.99

CLASSIFICATIONS:

Foreman

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:
- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional $3.00 per hour.
FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:
-where Level A, B, or C protection is required: + $5.00/hr
-other Hazardous Waste site: + $1.00/hr

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
50.95	39.13	90.08	93.33

CLASSIFICATIONS:

"D" Rate:
basic, landscape, asphalt, slurry seal, or railroad track laborer; utility meter installer; flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofer; timberman; wagon drill or drill master helper; powder carrier; magazine tender; signal man; power buggy operator; tree cutter; operator of basic power tools

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
51.65	39.13	90.78	94.03

CLASSIFICATIONS:

"C" Rate:
pipe layer; laser man; conduit or duct line layer; operator of jack hammer, chipping hammer, pavement breaker, concrete cutter, asphalt cutter, sheet hammer, or walk-behind saw cutter; sandblaster; acetylene cutting or burning; wagon drill, directional drill, or hydraulic drill operator; drill master; core driller; asphalt raker or lute man

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date :**

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
51.90	39.13	91.03	94.28

CLASSIFICATIONS:

"B" Rate:
concrete finisher; setter of brick or stone pavers; stone cutter; form setter; manhole, catch basin, or inlet builder; asphalt screedman; rammer; hardscaping; gunite nozzle man

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
55.45	39.13	94.58	97.83

CLASSIFICATIONS:

"A" Rate:
blaster

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
55.20	39.13	94.33	97.58

CLASSIFICATIONS:

"FOREMAN" Rate:
labor foreman, asphalt foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
56.20	39.13	95.33	98.58

CLASSIFICATIONS:

"GENERAL FOREMAN" Rate

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
52.40	39.13	91.53	94.78

CLASSIFICATIONS:

TRAFFIC CONTROL COORDINATOR Rate

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date :**

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
56.70	39.13	95.83	100.08

CLASSIFICATIONS:

" CERTIFIED FOREMAN Rate" :

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
57.70	39.13	96.83	101.08

CLASSIFICATIONS:

" CERTIFIED GENERAL FOREMAN Rate" :

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:
- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional $3.00 per hour.

FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:
-where Level A, B, or C protection is required: + $5.00/hr
-other Hazardous Waste site: + $1.00/hr

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
50.95	39.13	90.08	93.33

CLASSIFICATIONS:

"D" Rate:
basic, landscape, asphalt, slurry seal, or railroad track laborer; utility meter installer; flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofer; timberman; wagon drill or drill master helper; powder carrier; magazine tender; signal man; power buggy operator; tree cutter; operator of basic power tools

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
51.65	39.13	90.78	94.03

CLASSIFICATIONS:

"C" Rate:
pipe layer; laser man; conduit or duct line layer; operator of jack hammer, chipping hammer, pavement breaker, concrete cutter, asphalt cutter, sheet hammer, or walk-behind saw cutter; sandblaster; acetylene cutting or burning; wagon drill, directional drill, or hydraulic drill operator; drill master; core driller; asphalt raker or lute man

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
55.45	39.13	94.58	97.83

CLASSIFICATIONS:

"A" Rate:
blaster

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
55.20	39.13	94.33	97.58

CLASSIFICATIONS:

"FOREMAN" Rate:
labor foreman, asphalt foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
56.20	39.13	95.33	98.58

CLASSIFICATIONS:

"GENERAL FOREMAN" Rate

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
52.40	39.13	91.53	94.78

CLASSIFICATIONS:

TRAFFIC CONTROL COORDINATOR Rate

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
57.70	39.13	96.83	101.08

CLASSIFICATIONS:

" CERTIFIED GENERAL FOREMAN Rate" :

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date :**

Effective Dates:

	03/01/2025		**03/03/2026**
Rate	Fringe	Total	Total
56.70	39.13	95.83	100.08

CLASSIFICATIONS:

" CERTIFIED FOREMAN Rate" :

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
51.90	39.13	91.03	94.28

CLASSIFICATIONS:

"B" Rate:
concrete finisher; setter of brick or stone pavers; stone cutter; form setter; manhole, catch basin, or inlet builder; asphalt screedman; rammer; hardscaping; gunite nozzle man

PIPELINE - MAINLINE TRANSMISSION **Rates Expiration Date :**

These rates apply to the following: welding on Transportation Mainline pipe lines (cross-country pipe lines, or any segments thereof, transporting coal, gas, oil, water or other transportable materials, vapors or liquids, including portions of such pipe lines within private property boundaries up to the final metering station or connection - the point where a valve, consumer connection, or town border station divides mainline transmission lines or higher pressure lateral and branch lines from lower pressure distribution systems).

PER DIEM PAYMENT:
In addition to the total wage rate paid for each craft, the following per diem (per day) amounts must also be paid - Pipeline Journeyman: $80.50; Pipeline Journeyman Welder: $140.50; and Pipeline Helper: $64.50. Note: in order to receive the per diem payment an employee must work a minimum of 8 hours in a 24 hour period.

NOTES:
- Journeymen employed as "stringer bead" welders and journeymen who are regularly employed as "hot-pass" welders shall receive $1.00 per hour more than other journeymen.
- Welders running "stringer bead" or "hot-pass" on "cutouts" or "tie-ins" on a production basis shall be paid $1.00 per hour above the journeymen rate.
- Whenever a welder helper is employed using a power buffer or power grinder immediately behind the stringer bead and /or hot-pass welders, and the pipe gang is set on a production basis, the helper shall be paid $2.00 per hour above the helper rate.
- If back welding is performed inside a pipe under either or both of the following conditions, the welder engaged in the welding will receive $3.00 per hour above the regular rate for the job only for the days on which such back welding is performed:
  - The employer elects, as a regular procedure, to back weld each line-up. This condition is not intended to apply to occasional back welding performed by the pipe gang to repair a bead, to rectify a "high-lo" condition or wall thickness, etc.
  - A welder is required to back weld a completed weld behind the firing line.
- If the welder helper is required to go inside the pipe for the purpose of brushing, buffing and grinding the weld, they shall receive a wage rate $1.00 per hour above the regular helper rate for the days involved.
- Welders working on "hot work" shall be paid $2.00 per hour above the regular rate for each day engaged in such work. "Hot work' is defined as work on lines in service where there is the danger of fire or explosion.

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

OVERTIME:
Hours in excess of 8 per day, and all hours on Sundays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

06/18/2025

Rate	Fringe	Total
58.89	36.35	95.24

CLASSIFICATIONS:

Pipeline Journeyman Welder

Effective Dates:

06/18/2025

Rate	Fringe	Total
58.89	36.35	95.24

CLASSIFICATIONS:

Pipeline Journeyman

PIPELINE - MAINLINE TRANSMISSION **Rates Expiration Date :**

Effective Dates:

06/18/2025

Rate	Fringe	Total
33.84	25.47	59.31

CLASSIFICATIONS:

Pipeline Helper

PIPELINE - GAS DISTRIBUTION **Rates Expiration Date :**

These rates apply to the following: welding on gas line distribution systems (that portion of the gas distribution system placed in streets, roads, subways, tunnels, viaducts, highways and easements which serves the users of gas).

SHIFT DIFFERENTIALS:
An "irregular" shift may start any time from 5:00 PM to 12:00 AM, Monday through Friday, and shall receive an additional 15% of the regular rate per hour, inclusive of benefits.

OVERTIME:
Hours in excess of forty per week, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

11/04/2024

Rate	Fringe	Total
64.70	34.74	99.44

CLASSIFICATIONS:

Pipeline Journeyman Welder

Effective Dates:

11/04/2024

Rate	Fringe	Total
64.70	34.74	99.44

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

11/04/2024

Rate	Fringe	Total
41.73	24.77	66.50

CLASSIFICATIONS:

Pipeline Helper

ASPHALT LABORERS- NORTH **Rates Expiration Date :**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren
{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}
The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.
SHIFT DIFFERENTIALS:
- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional $3.00 per hour.
OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.
RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.
Hazardous Waste Work:
-where Level A, B, or C protection is required: + $5.00/hr
-other Hazardous Waste site: + $1.00/hr
FOR TIDE WORK (pertains to tidal water): A contractor can start their job according to tide schedules (tide schedules are the various high and low tides related to this work) providing the eight (8) hour shift is completed between the hours of 5:00 AM and 6:30 PM.

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
55.20	39.13	94.33	97.58

CLASSIFICATIONS:

Asphalt Foreman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
51.90	39.13	91.03	94.28

CLASSIFICATIONS:

Asphalt Screedman

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
51.65	39.13	90.78	94.03

CLASSIFICATIONS:

Asphalt Raker or Lute Man

ASPHALT LABORERS- NORTH **Rates Expiration Date :**

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
50.95	39.13	90.08	93.33

CLASSIFICATIONS:

Asphalt Laborer

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
56.70	39.13	95.83	100.08

CLASSIFICATIONS:

Certified Asphalt Foreman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Electrician-Utility Work (North)
(For apprentice rates refer to Electrician-Utility Work (North) in any county rate package).
These rates apply to work contracted for by the following utility companies:
Public Service Electric & Gas Co. of NJ, GPU Energy, Borough of Madison Electric Department, Sussex Rural Electric Cooperative, Rockland Utilities, and Butler Municipal Electric Co.
These rates do not apply to work on substations or switching stations.
For Utility work contracted for by a utility company other than those listed above or those listed under "Electrician-Utility Work (South), see the "Outside Commercial Rates" for the county in which the jobsite is located.

* FOR OUTSIDE COMMERCIAL RATES PLEASE SEE COUNTY RATES

The regular workday is 8 hours, between 6:00 AM and 6:00 PM.
FOR EMERGENCY WORK ONLY: (emergency work is defined as work caused by storm, catastrophe, act of god, and circumstances beyond the control of the employer)-all hours of work shall be paid at double the hourly rate.
SHIFT DIFFERENTIALS:
Shift work must run for a minimum of 5 consecutive workdays.
2nd shift (between the hours of 4:30 PM and 1:00 AM): 8 hours of work + 17.3% of the regular rate, inclusive of benefits.
3rd shift (between the hours of 12:30 AM and 9:00 AM): 8 hours of work + 31.4% of the regular rate per hour, inclusive of benefits.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular wokday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.
Four 10-hour days may worked, at straight time, between 6:00 AM and 6:00 PM, Monday through Thursday.

RECOGNIZED HOLIDAYS:
New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day and Christmas Day, or day on which they are legally observed.

Effective Dates:

12/01/2024

Rate	Fringe	Total
64.83	44.73	109.56

CLASSIFICATIONS:

Chief Lineman

Effective Dates:

12/01/2024

Rate	Fringe	Total
61.16	42.20	103.36

CLASSIFICATIONS:

Journeyman Lineman

Effective Dates:

12/01/2024

Rate	Fringe	Total
61.16	42.20	103.36

CLASSIFICATIONS:

Special License Operator

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

12/01/2024

Rate	Fringe	Total
60.55	41.77	102.32

CLASSIFICATIONS:

Transit Man

Effective Dates:

12/01/2024

Rate	Fringe	Total
58.71	40.50	99.21

CLASSIFICATIONS:

Line Equipment Operator

Effective Dates:

12/01/2024

Rate	Fringe	Total
51.37	35.44	86.81

CLASSIFICATIONS:

Dynamite Man

Effective Dates:

12/01/2024

Rate	Fringe	Total
76.45	52.75	129.20

CLASSIFICATIONS:

General Foreman

Effective Dates:

12/01/2024

Rate	Fringe	Total
70.33	48.52	118.85

CLASSIFICATIONS:

Assistant General Foreman

Effective Dates:

12/01/2024

Rate	Fringe	Total
68.50	47.26	115.76

CLASSIFICATIONS:

Line Foreman

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

12/01/2024

Rate	Fringe	Total
49.54	34.18	83.72

CLASSIFICATIONS:

Street Light Mechanical Leader

Effective Dates:

12/01/2024

Rate	Fringe	Total
47.09	32.49	79.58

CLASSIFICATIONS:

Groundman Winch Operator

Effective Dates:

12/01/2024

Rate	Fringe	Total
47.09	32.49	79.58

CLASSIFICATIONS:

Groundman Truck Operator

Effective Dates:

12/01/2024

Rate	Fringe	Total
46.48	32.07	78.55

CLASSIFICATIONS:

Street Light Mechanic

Effective Dates:

12/01/2024

Rate	Fringe	Total
46.48	32.07	78.55

CLASSIFICATIONS:

Line Equipment Mechanic

Effective Dates:

12/01/2024

Rate	Fringe	Total
39.75	27.42	67.17

CLASSIFICATIONS:

Groundman 2nd Year

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date :**

Effective Dates:

12/01/2024

Rate	Fringe	Total
36.70	25.32	62.02

CLASSIFICATIONS:

Groundman 1st Year

Effective Dates:

12/01/2024

Rate	Fringe	Total
60.55	41.77	102.32

CLASSIFICATIONS:

Line Equipment Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Electrician-Utility Work (South)
(For apprentice rates refer to Electrician-Utility Work (South) in any county rate package).
These rates apply to work contracted for by the following utility company:
Atlantic City Electric.
These rates do not apply to work on substations or switching stations.
For utility work contracted for by a utility company other than the one listed above or those listed under "Electrician-Utility Work (North), see the "Outside Commercial Rates" for the county in which the jobsite is located.

* FOR OUTSIDE COMMERCIAL RATES PLEASE SEE COUNTY RATES

The regular workday is 8 hours, between 7:00 AM and 4:30 PM.
FOR EMERGENCY WORK ONLY: (emergency work is defined as work caused by storm, catastrophe, act of god, and circumstances beyond the control of the employer)- all hours of work shall be paid at double the hourly rate.
SHIFT DIFFERENTIALS:
Shift work must run for a minimum of 5 consecutive workdays.
When two (2) or three (3) shifts are worked the following shall apply:
1st shift (between the hours of 8:00 AM and 4:30 PM)
2nd shift (between the hours of 4:30 PM and 12:30 AM): 8 hours of work + 10% of the regular rate of pay for 7.5 hours worked.

3rd shift (between the hours of 12:30 AM and 8:00 AM): 8 hours of work + 15% of the regular rate of pay for 7 hours worked.

OVERTIME:
Hours in excess of 8 per day, or before or after the regular wokday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate. All hours on Sundays and Holidays shall be paid double the hourly rate.

Four 10-hour days may be worked, at straight time, between 6:00 AM and 6:00 PM, Monday through Thursday with Friday used as a make-up day.

RECOGNIZED HOLIDAYS:
New Year's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day or on days celebrated.

WORKING RULES:
There shall be a Foreman in charge of each work crew. No crews are to exceed twelve (12) men, including Foremen.

There shall be a General Foreman designated for transmission work when three (3) or more crews are on the same job and for distribution work where there are are more than twenty (20) employees on site.

A small job crew shall consist of five (5) or less employees, one (1) of the Journeyman Linemen in the crew shall be designated as a Small Job Foreman.
Work performed from ladders and/or mechanical lift equipment shall be the work of Linemen and/or Apprentices.
On new construction, fitting and framing poles, towers or structures may be done by Journeymen and/or Apprentices.
Groundmen may assist, but may not perform any work which would be performed by Linemen if assembled in the air.

There shall be a Journeyman Lineman in each pole setting, erection, grounding, wire and cable-pulling crew of more than three (3) men.

Effective Dates:

12/01/2024

Rate	Fringe	Total
71.87	59.12	130.99

CLASSIFICATIONS:

General Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/01/2024

Rate	Fringe	Total
64.01	54.22	118.23

CLASSIFICATIONS:

Foreman

Effective Dates:

12/01/2024

Rate	Fringe	Total
60.64	52.12	112.76

CLASSIFICATIONS:

Small Job Foreman

Effective Dates:

12/01/2024

Rate	Fringe	Total
56.15	49.33	105.48

CLASSIFICATIONS:

Heavy Equipment Operator

Effective Dates:

12/01/2024

Rate	Fringe	Total
56.15	49.33	105.48

CLASSIFICATIONS:

Cable Splicer

Effective Dates:

12/01/2024

Rate	Fringe	Total
56.15	49.33	105.48

CLASSIFICATIONS:

Journeyman Lineman

Effective Dates:

12/01/2024

Rate	Fringe	Total
56.15	49.33	105.48

CLASSIFICATIONS:

Journeyman Welder

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/01/2024

Rate	Fringe	Total
56.15	49.33	105.48

CLASSIFICATIONS:

Journeyman Painter

Effective Dates:

12/01/2024

Rate	Fringe	Total
44.92	42.36	87.28

CLASSIFICATIONS:

Light Equipment Operator

Effective Dates:

12/01/2024

Rate	Fringe	Total
39.31	38.86	78.17

CLASSIFICATIONS:

Groundman Truck Driver

Effective Dates:

12/01/2024

Rate	Fringe	Total
36.50	37.12	73.62

CLASSIFICATIONS:

Groundman 3rd Year

Effective Dates:

12/01/2024

Rate	Fringe	Total
33.69	35.37	69.06

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/01/2024

Rate	Fringe	Total
30.88	33.62	64.50

CLASSIFICATIONS:

Groundman 1st Year

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date :**

Effective Dates:

12/01/2024

Rate	Fringe	Total
24.71	29.80	54.51

CLASSIFICATIONS:

Flagman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date :**

THESE RATES APPLY TO CONSTRUCTION ON NEW TRANS HUDSON TUNNELS ONLY

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:
- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional $3.00 per hour.

OVERTIME:
- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:
-where Level A, B, or C protection is required: + $5.00/hr
-other Hazardous Waste site: + $1.00/hr

Traffic Control Coordinator: When either of the work classifications found below are working as a Traffic Control Coordinator they are to receive $.75 above their current rate of pay.

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
80.55	39.13	119.68	123.81

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

	03/01/2025		03/01/2026
Rate	Fringe	Total	Total
80.10	39.13	119.23	123.36

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrical Foreman, Rigging Foreman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date :**

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
79.35	39.13	118.48	122.61

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Clean-up Foreman, Grout Foreman

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
83.10	39.13	122.23	126.36

CLASSIFICATIONS:

Blaster

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
78.53	39.13	117.66	121.78

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
78.00	39.13	117.13	121.26

CLASSIFICATIONS:

Skilled Men (including Caulker, Powder Carrier, all other skilled men)
Skilled Men (including Miner, Drill Runner, Iron Man, Conveyor Man, Maintenance Man, Safety Miner, Rigger, Block Layer, Cement Finisher, Rod Man)

Effective Dates:

03/01/2025			03/01/2026
Rate	Fringe	Total	Total
77.78	39.13	116.91	121.03

CLASSIFICATIONS:

Semi-Skilled Men (including Bell or Signal Man top or bottom, Form Worker & Mover, Concrete Worker, Shaft Man, Tunnel Laborer, Caulker's Helper, all other semi-skilled)
Semi-Skilled Men (including Miner's Helper, Chuck Tender, Track Man, Nipper, Brake Man, Derail Man, Cable Man, Hose Man,
Gravel Man, Form Man)

TERRITORY

ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT

PREVAILING WAGE RATE DETERMINATION

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date :**

Effective Dates:

	03/01/2025		**03/01/2026**
Rate	Fringe	Total	Total
77.18	39.13	116.31	120.43

CLASSIFICATIONS:

All others (including Powder Watchman, Change House Attendant, Top Laborer, Job Steward)

SECTION 011000 - SUMMARY

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Project information.
   2. Work covered by Contract Documents.
   3. Phased construction.
   4. Access to site
   5. Contractor's use of site and premises.
   6. Coordination with occupants.
   7. Work restrictions.
   8. Specification and Drawing conventions.

B. Related Requirements:
   1. Section 015000 - Temporary Facilities and Controls for limitations and procedures governing temporary use of Owner's facilities.
   2. Section 017300 - Execution for coordination of Owner-installed products.

1.03 PROJECT INFORMATION

A. Project Identification: HVAC Upgrades at Ocean Acres Elementary School

B. Project Location: 489 Nautilus Drive, Stafford Township, New Jersey 08050

C. Owner: Stafford Township Board of Education
   1. Owner's Representative: Lourdes LaGuardia

D. Architect: Spiezle Architectural Group, Inc.
   1. Architect's Representative: Justin Kozik, AIA, Senior Project Manager

E. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:
   1. MEP Engineer: Spiezle Group, Inc.
      a. Representative: Steven Langan, PE, Director of Engineering

F. Construction Manager:New Road Construction Management Company Inc.
   1. Construction Manager Representative: Sherri Cross-Murphy
   2. Construction Manager has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for construction between Owner and Contractor, according to a separate contract between Owner and Construction Manager.

G. Web-Based Project Software: Project software will be used for purposes of managing communication and documents during the construction stage.
   1. See Section 013100 - Project Management and Coordination for requirements for using web-based Project software.

1.04 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
   1. Unit Ventilator Replacement
   2. Shelving Replacement associated with Unit Ventilators
   3. Ancillary Mechanical and Electrical work associated with Unit Ventilators.

B. Type of Contract:
   1. Project will be constructed under a single prime contract.

1.05 PHASED CONSTRUCTION

A. The Work shall be conducted in one single phase.

B. Project Substantial Completion: Work will commence within ten (10) calendar days after receipt of written "Notice to Proceed" and be substantially completed in accordance with the Contract Documents and Contractor’s Construction Schedule for substantial completion of the entire project including a Certificate of Occupancy for the entire building by 08-28-2026.
   1. Construction work shall be scheduled to begin after the closing of the school for the summer break currently scheduled for June 22, 2026 but subject to change.
   2. Limited prep work and non-invasive installations that does not disrupt school operations, can be scheduled to occur during the 2025-2026 school year. Work shall be performed during evening, weekend, or school vacation hours during the school year, with prior approval from architect and owner. Work areas during the school year shall be cleaned daily to allow for occupancy the following day.
   3. All time limits stated in the Contract are of the essence.

1.06 ACCESS TO SITE

A. Use of Site: Limit use of Project site to work in areas indicated and coordinated with Owner during summer use. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Limits: Confine construction operations to area(s) as indicated on the drawings or established by approval from the Owner so as not to interfere with facility hours of operations.
   2. Owner Occupancy: Allow for Owner occupancy of the Project site and use by the public.
   3. Driveways, Walkways and Entrances: Keep driveways, parking garages, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
      a. Schedule deliveries to minimize use of driveways and entrances by construction operations.

b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
c. Contractor is not permitted to use any parking spaces designated for Owner's staff or visitors. Contractor shall review available on-site parking locations prior to submitting his bid.

B. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Maintain heating, ventilation and air conditioning levels in Owner occupied areas of the building throughout the construction period. Repair damage caused by construction operations.

C. The Contractor shall comply with the Owner's Site Security Programs as administered by the Owner including Contractor badging. Each employee of the Contractor will be supplied a badge by the Owner, which will be distributed to them by the Owner. Each employee must have a State issued picture ID in order to be assigned a badge. This badge must be worn at all times while on the construction site. No Contractor will be allowed access to the existing building without a badge and prior approval from the Owner. The Contractor may be fined $250.00 per occurrence for any worker who does not have a proper badge and identification.

1.07 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
1. Prior to commencing work on site, the Contractor shall meet with the Architect, Construction Manager, or Owner's Designee to review work to be completed, determine its impact on occupied areas and adjacent properties, etc. to distribute necessary guidelines.
2. Designated areas will be established, as necessary, for parking, toilet facilities, special trailers and deliveries, etc.
3. The Contractor and its Employees and its subcontractors are authorized to be on grounds only during the performance of work related to the project.
4. Obey speed limits as posted, or if not posted, not to exceed 10 mph on grounds. Yield to all pedestrian traffic. Do not blow horn unless necessary. Not all persons on site can be expected to possess good pedestrian skills.
5. Vehicles and operating equipment shall be turned off, locked and secure whenever not in use. All tools and equipment, not removed from the site on a daily basis, shall be secured and kept in the work staging area at the end of the workday. The Owner will not assume responsibility for any missing articles.
6. Do not fraternize with Owner's employees or building occupants while working on site.
7. Facility occupants and employees are not allowed in work areas. Active work areas shall always be secured and/or enclosed to prevent occupants and employees from wandering inside.
8. Safety shall always be maintained by the Contractor at the job site .
9. Possession and/or consumption of alcoholic beverages or drugs are always strictly prohibited on site .
10. Contractor and its personnel are required to report in and out on a daily basis at a location designated by the Owner and may be required to sign in and out in a

visitor's log book in the presence of the Owner's staff person of responsible charge. The Owner will notify its respective building supervisors and any affected departments when the Contractor and its personnel will be working in any occupied area of the building.

B. Limits on Use of Site: Limit use of Project site to Work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
   1. Limits on Use of Site: Confine construction operations to work in areas indicated or established by approval from the Owner so as not to interfere with facility hours of operations.
   2. Owner Occupancy: Allow for Owner occupancy of the Project site and use by the public.
   3. Driveways, Walkways and Entrances: Keep driveways, parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
      a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
      b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
      c. Contractor is not permitted to use any parking spaces designated for Owner's staff or visitors. Contractor shall review available on-site parking locations prior to submitting his bid.
      d. Schedule deliveries to minimize use of driveways and entrances and to avoid morning and afternoon busing periods.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Unless otherwise noted, maintain heating, ventilation and air conditioning levels in Owner occupied areas of the building throughout the construction period. Repair damage caused by construction operations.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.08 COORDINATION WITH OCCUPANTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, except for areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
   2. Provide not less than three (3) calendar days notice to Owner of activities that will affect Owner's operations.

B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work,

prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.
5. The occupancy of any portion of the Project does not constitute an acceptance of any work as the Project will be accepted as a whole and not in units. Prior to such occupancy, however, the Architect, Owner's Representative, and the Contractor shall fully inspect the portions of the Project to be occupied, preparing a complete list of omissions of materials, faulty workmanship, or any items to be repaired or replaced. The Owner will assume responsibility for damage to premises so occupied of any items not on this list when such damage is due to greater than normal wear and tear but does not assume responsibility for improper or defective workmanship or materials.

1.09 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Work shall generally be performed during summer hours (as noted below). During the school year, work shall be generally performed during the hours of 3:30 p.m. to 11:00 p.m., Monday through Friday, except as otherwise indicated.
   1. Special Owner Activities: Special activities including testing, after hour meetings, plays, conferences, and presentations will be conducted within the building(s) and on site during and after regular Owner operation hours and on weekends during the duration of the project. At these times the Contractor may have limited access to the facility. The Owner will provide these dates to the Contractor as soon as they are known.
   2. Weekend Hours: Saturday from 7:00 a.m. to 3:30 p.m., Sunday work will not be allowed, and is subject to approval by the Owner and further subject to ordinances and regulations by local and governing authorities having jurisdiction.
   3. Early Morning Hours: 4:00 a.m. to 7:00 a.m., subject to approval by the Owner and further subject to ordinances and regulations by local and governing authorities having jurisdiction.
   4. Evening Hours: 3:30 p.m. to 11:00 p.m., subject to approval by the Owner and further subject to ordinances and regulations by local and governing authorities having jurisdiction.

5. Summer Hours: 7:00 a.m. to 3:30 p.m., Monday through Friday, except as otherwise indicated, subject to approval by the Owner and further subject to ordinances and regulations by local and governing authorities having jurisdiction.
6. School Vacation Hours: 7:00 a.m. to 3:30 p.m., Monday through Friday, except as otherwise indicated, subject to approval by the Owner and further subject to ordinances and regulations by local and governing authorities having jurisdiction.
7. Hours for Utility Shutdowns: Coordinate all utility shutdowns with the Owner through the Architect or Construction Manager at least four (4) weeks prior to the anticipated work. Then notify the Owner at least three (3) calendar days prior to actual shutdown. The existing building fire protection system shall not be diminished. Removal of existing devices shall not occur until the new equipment is in place for the switchover.
8. Hours for Core Drilling and other noisy activities, etc. and demolition shall be planned for the least distracting hours of the day and coordinated with the Owner through the Architect or Construction Manager. The Owner reserves the right to stop those activities to be deemed excessive until a more appropriate time or day at their discretion.
9. The Contractor shall not schedule deliveries that conflict with the normal bus drop-off or pick-up times.
10. The Contractor shall comply with the Owner’s Site Security Programs as described in section ‘Access to Site’.
11. Summer recess: Approximately from the latter part of June to around Labor Day each year, full-time normal academic activity is suspended, except for routine occupancy of office areas. Increased access for construction purposes will be accommodated although cooperative scheduling of activities is still necessary.
12. All personnel shall dress in clothing appropriate to the work they perform. All personnel are to wear shirts, hardhats, safety shoes, glasses, gloves, masks or respirators, noise protection devices, and other protective clothing and equipment as required by OSHA standards.
13. For the safety of occupants, the use of a crane to lift any items on the roof cannot be performed over an occupied building. This work must be scheduled and coordinated with the Owner. The Contractor shall always provide additional barricades around his crane as required .
14. The Contractor is responsible for maintaining all temporary emergency egress routes. The Contractor shall obtain approval from the Building, Police, Rescue and Fire Departments for all temporary emergency egress routes. The Contractor shall provide temporary exit signs as required to ensure clearly marked egress routes.
15. The Owner has the right to require disruptive work to be discontinued if affecting the students and employee staff.

C. On-Site Work Day Restrictions: Do not perform work resulting in utility shutdowns or resulting in noisy activity on-site during work black-out days indicated in Document 003113 "Preliminary Schedules."

D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
   1. Notify Owner not less than three (3) calendar days in advance of proposed utility interruptions.
   2. Obtain Owner's written permission before proceeding with utility interruptions.

E. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
   1. Notify Owner not less than three (3) calendar days in advance of proposed disruptive operations.
   2. Obtain Owner's written permission before proceeding with disruptive operations.

F. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances within the existing building and on Project site is not permitted.

G. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

H. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
   1. Maintain list of approved screened personnel with Owner's representative.

I. Changing of clothing in public spaces, including but not limited to the project area, corridors, parking lots, and other spaces where students might be present, is not permitted.

1.10 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
   3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. **Unless otherwise indicated, linked information is not part of the Contract Documents**.
   4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.

3. Keynoting: Materials and products in the drawings may be identified by reference keynotes.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.
   1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:
   1. Lump Sum allowances.

C. Related Requirements:
   1. Section 012600 - Contract Modification Procedures for procedures for submitting and handling Change Orders.
   2. Section 014000 - Quality Requirements for procedures governing the use of allowances for field testing by an independent testing agency.

1.03 DEFINITIONS

A. Allowance: A quantity of work or dollar amount included in the Base Bid of the Contract, established in lieu of additional requirements, used to defer selection of actual materials and equipment to a later date when direction will be provided to Contractor. If necessary, additional requirements will be issued by Change Order.

1.04 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier or approved equal.

1.05 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.06 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.07 LUMP SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials according to Owner's/Architect’s written instructions and shall include taxes, freight, and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

C. Unused Materials: Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
   1. If requested by Architect, retain and prepare unused material for storage by Owner. Deliver unused material to Owner's storage space as directed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.02 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.03 SCHEDULE OF ALLOWANCES

A. **Lump Sum Allowance No. AL-01**: Lump Sum Allowance: Include a Lump Sum allowance of $150,000.00 for use according to Owner's/Architect’s written instructions.

END OF SECTION 012100

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Substitutions shall be in accordance with N.J.A.C. 6A:23A-21.1, N.J.A.C. 5:34-9.2 and, where applicable, N.J.A.C. 6A:26-4.9.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:
   1. Section 012100 - Allowances for products selected under an allowance.
   2. Section 016000 - Product Requirements for requirements for submitting comparable product submittals for products by listed manufacturers.

1.03 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.04 ACTION SUBMITTALS

A. Equivalent or Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Equivalent or Substitution Request Form: Use form provided in Project Manual.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified product, fabrication, or installation method cannot be provided, if applicable.
      b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
   a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
   b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.05 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.06 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.07 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
   1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      b. Substitution request is fully documented and properly submitted.
      c. Requested substitution will not adversely affect Contractor's construction schedule.
      d. Requested substitution has received necessary approvals of authorities having jurisdiction.
      e. Requested substitution is compatible with other portions of the Work.
      f. Requested substitution has been coordinated with other portions of the Work.
      g. Requested substitution provides specified warranty.
      h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
   1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
      b. Requested substitution does not require extensive revisions to the Contract Documents.
      c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      d. Substitution request is fully documented and properly submitted.
      e. Requested substitution will not adversely affect Contractor's construction schedule.
      f. Requested substitution has received necessary approvals of authorities having jurisdiction.
      g. Requested substitution is compatible with other portions of the Work.
      h. Requested substitution has been coordinated with other portions of the Work.

i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:
   1. Section 012500 - Substitution Procedures for administrative procedures for handling requests for substitutions made after the Contract award.
   2. Section 013100 - Project Management and Coordination for requirements for forms for contract modifications provided as part of web-based Project management software.

1.03 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.04 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect or Construction Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Work Change Proposal Requests issued by Architect or Construction Manager are not instructions either to stop work in progress or to execute the proposed change.
   2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.

d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect or Construction Manager.
   1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   4. Include costs of labor and supervision directly attributable to the change.
   5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
   6. Comply with requirements in Section 012100 - Allowances if the proposed change requires substitution of one product or system for product or system specified.
   7. Proposal Request Form: Use form acceptable to Architect.

1.05 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 - Allowances for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

1.06 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect or Construction Manager will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.07 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect or Construction Manager may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
   1. Section 012100 - Allowances for procedural requirements governing the handling and processing of allowances.
   2. Section 012600 - Contract Modification Procedures for administrative procedures for handling changes to the Contract.
   3. Section 013200 - Construction Progress Documentation for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.03 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.04 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
   1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
   2. Submit the schedule of values to Architect through Construction Manager at earliest possible date, but no later than (15) fifteen days of the written Notice to Proceed and no later than (7) seven days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one-line item for each Specification Section.
   1. Identification: Include the following Project identification on the schedule of values:
      a. Project name and location.

b. Owner's name.
c. Name of Architect.
d. Architect's Project number.
e. Contractor's name and address.
f. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document AIA G703: Continuation Sheets.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five (5) percent of the Contract Sum.
4. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site.
5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
7. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling two (2) percent of the Contract Sum and subcontract amount.
8. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.05 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and Construction Manager and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Supplementary Conditions. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Times: Submit Application for Payment to Architect by the first day of the month. The period covered by each Application for Payment is one month, ending on the last day of the month .
   1. Submit draft copy of Application for Payment seven days prior to due date for review by Architect.

D. Application for Payment Forms: Use AIA Document AIA G702 and AIA Document AIA G703 as form for Applications for Payment.

E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

F. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:
      a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
      b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
      c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Transmittal: After approval of pencil copy of Application for Payment, submit (3) three signed and notarized original copies of each Application for Payment to the Architect and Construction Manager by a method ensuring receipt within 24 hours. One copy shall include waivers of lien form AIA G706 and AIA G706A and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
   1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   2. When an application shows completion of an item, submit conditional final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
   5. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.

I. Certified payroll records for the applicable period submitted directly to Owner.

J. Form AA-201: Initial Project Workforce Reports.

K. Form AA-202: Monthly Project Workforce Reports.

L. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Products list (preliminary if not final).
   5. Schedule of unit prices.
   6. Submittal schedule (preliminary if not final).
   7. List of Contractor's staff assignments.
   8. List of Contractor's principal consultants.
   9. Copies of building permits.
   10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
   11. Initial progress report.
   12. Report of preconstruction conference.
   13. Certificates of insurance and insurance policies.
   14. Performance and payment bonds.
   15. Data needed to acquire Owner's insurance.

M. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
   1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
      a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 - Closeout Procedures.
   2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

N. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
   1. Evidence of completion of Project closeout requirements.
   2. Certification of completion of final punch list items.
   3. Insurance certificates for products and completed operations where required and proof that taxes (unless tax exempt), fees, and similar obligations were paid.
   4. Updated final statement, accounting for final changes to the Contract Sum.
   5. AIA Document AIA G706: ‘Contractor's Affidavit of Payment of Debts and Claims’.
   6. AIA Document AIA G706A: ‘Contractor's Affidavit of Release of Liens.
   7. AIA Document AIA G707: ‘Consent of Surety to Final Payment’.
   8. Evidence that claims have been settled.
   9. Certification of paid wages. [in accordance with New Jersey Prevailing Wage Act].
   10. Maintenance Bond.
   11. Contractor’s ‘As-Built’ documents in PDF file format, unless otherwise agreed upon in writing by Architect.
   12. Operations and Maintenance Manuals.
   13. Proof of ‘attic stock’ or ‘extra materials’ received by the Owner.
   14. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

15. Final liquidated damages settlement statement.
16. Proof that taxes (unless tax exempt), fees, and similar obligations are paid.
17. Waivers and releases.
18. Written Guarantee of 2-years.
19. Completed Punchlist signed and notarized by the Contractor's authorized representative.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
   1. General coordination procedures.
   2. Coordination drawings.
   3. RFIs.
   4. Digital project management procedures.
   5. Web-based Project management software package.
   6. Project meetings.

B. The contractor and its subcontractors shall participate in coordination requirements as described herein.

C. Related Requirements:
   1. Section 013200 - Construction Progress Documentation for preparing and submitting Contractor's construction schedule.
   2. Section 017300 - Execution for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
   3. Section 017700 - Closeout Procedures for coordinating closeout of the Contract.

1.03 DEFINITIONS

A. RFI: Request for Information. Request from Owner, Construction Manager, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

1.04 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
   1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
   2. Number and title of related Specification Section(s) covered by subcontract.
   3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within (15) days of issuance of the Notice to Proceed, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
   1. Post copies of list in Project meeting room. Keep list current at all times.

1.05 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation. The Contractor shall be responsible for being the supervisor, manager, overseer, coordinator and expediter of its Subcontractors. The Contractor shall have included in its bid a sufficient cost amount to furnish such administrative and supervisory duties.
   1. The Lump Sum Single Prime Contractor “The Contractor” is the sole responsible party for the coordination of the entire project.
   2. The Contractor shall be responsible to coordinate and expedite the total construction process and all of its parts. The Owner relies upon the organization, management, skill, cooperation and efficiency of the Contractor to supervise, direct, control and manage the work and to coordinate and expedite the efforts of the other prime contractors and subcontractors so as to deliver the work conforming to the contract within the scheduled time. The Contractor is responsible for proper sequence and coordination. It shall determine the location of work and resolve conflicts amongst Contractors.
   3. The Contractor shall provide a qualified full-time staff member or members to manage the project on site. This CONSTRUCTION SUPERINTENDENT shall coordinate, organize, and manage the project from the contractor’s on site field office and oversee their own work and the work of their sub-contractors. Should the prime contractor be responsible for multiple projects at different sites, or multiple locations on one large site, then the contractor shall provide a separate qualified superintendent for each of the projects or locations. This determination shall be made by and subject to the approval of the Owner, Construction Manager, and Architect who at all times may require additional manpower. The superintendent shall be responsible for onsite safety, quality assurance, conformance with the Contract Documents and perform coordination with all on site construction personnel and/or subcontractors. The Construction superintendent shall be subject to the approval of the Owner, Construction Manager, and Architect who at all times have the right to require the contractor to replace this Construction superintendent if they fail to perform.
   4. The Contractor’s Project Manager shall coordinate, organize, and manage the project from the contractor’s main office and oversee the shop drawing process signing off for quality assurance and conformance with the Contract Documents on each shop drawing. The project manager shall be subject to the approval of the Owner, Construction Manager, and Architect who at all times have the right to require the contractor to replace this project manager if they fail to perform.
   5. The other subcontractor’s shall also have a designated superintendent and/or foreman who will at all times be subject to the approval of the Owner,

Construction Manager, and Architect. The Owner, Construction Manager, and Architect reserves the right to require the Contractor to replace the superintendent and/or foreman if, in the opinion of the Owner, Construction Manager, and Architect, the superintendent and/or foreman is not performing satisfactorily.

6. Each subcontractor shall coordinate his activities with the activities of other contractors.
7. The Contractor is required to submit a site logistics plan coordinating all Owner functions with the access and safety of the job site.
8. The Contractor is required to coordinate all the inspection and material testing to meet the contract documents specifications.
9. The Contractor has full and sole responsibility for construction methods and implementation of a "quality control system" to insure coordination.
10. The Contractor is responsible for field verification of all dimensions/measurements for the coordination of materials and trades. Check field dimensions, clearances, relationships to available space, and anchors.
11. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
12. The Contractor shall make all necessary arrangements to conduct work so that all parts shall be carried on harmoniously and simultaneously or sequentially, so as components or increments of the same shall not interfere or retard the progress of others.
13. The Contractor shall coordinate the delivery, unloading, movement, relocation, storage and protection of all materials.
14. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
15. Minor changes in locations of equipment, parts, etc. due to field conditions shall be made, if so directed, at no additional cost.
16. The Contractor shall examine the drawings and dimensions and is responsible for satisfactory joining and fitting of all parts of the work.
17. Make adequate provisions to accommodate items scheduled for later installation.
18. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
19. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities, scheduled activities of other contractors, and direction of Project Coordinator to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's construction schedule.

2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
   1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.06 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
   1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
      a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
      b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
      c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
      e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
      f. Indicate required installation sequences.
      g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
      h. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Coordination drawings shall be prepared in a joint effort by the Contractor and its Subcontractors to avoid material and equipment installation interference as well as project delays. The coordination drawings will clearly indicate locations, dimensions,

and elevations including, but not limited to, duct work, insulation, mechanical equipment, hot water supply and return piping, fire sprinkler work, electrical fixtures, electrical conduit, structural steel, beams, columns, joist, plumbing piping, plumbing equipment, ceiling grid, penetrations, lintels, etc. Additionally, any trade Contractor requiring a penetration to be made in wall, floor and or roof shall identify the required opening size and location. The size and type of lintel required for the penetration shall be required. Each trade Contractor is responsible for laying out their necessary wall, floor or roof penetration.

C. The Contractor will coordinate a meeting between its subcontractors to finalize the coordination review. Upon the final review as to the accuracy of the coordination drawings, Contractor's representative who has written authorization from the President of the Contractor to approve and sign-off on the coordination drawings will sign and date the coordination drawings. The Contractor will then submit copies of the signed and dated coordination drawing to the Architect and Construction Manager for review. The signed coordination drawings shall be submitted to the Architect and Construction Manager within (30) thirty calendar days from the date of Notice to Proceed. The Contractor that fails to furnish completed coordination drawings within the time specified shall be financially responsible for removals, repairs, patching, etc. caused by failure to provide coordination drawings at the time needed in coordination with the Contractor's Construction Schedule.

D. As the work progresses, the Contractor shall familiarize itself with the work to be done by others in so far as it affects its work and shall promptly give such information to others as affects their mutual interests. The Contractor shall notify the Architect of any condition that might prevent the satisfactory completion of their work.

E. The Contractor shall carefully check job space requirements with all other subcontractors to make sure that the combined work can be installed in the allotted spaces, chases, etc., with all piping, conduits, ductwork, etc. concealed from view. The Contractor shall coordinate its shop drawings with those of all other subcontractors. Coordination drawings shall be the mutual responsibility of all Contractors and Subcontractors involved. Any Contractor or its Subcontractor not coordinating its work with others will be responsible for any additional costs arising from lack of coordination. In the case of conflict between Contractors and its subcontractors, the Architect will have the final decision in accordance with the General Conditions of the Contract for Construction. If the Contractor fails to supply the proper sizes and locations, it shall be financially responsible for consequential corrective work.

F. Coordination Drawing Organization: Organize coordination drawings as follows:
   1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
   2. Plenum Space: Indicate subframing for support of ceiling, raised access floor, and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
   3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.

4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts, and electrical distribution equipment.
    c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
    a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
    c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
    d. Location of pull boxes and junction boxes dimensioned from column center lines.
8. Fire-Protection System: Show the following:
    a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
    a. If the Architect determines that coordination drawings are not being prepared in a manner consistent with the design intent, such as conduit runs, piping and the like exposed without regard to aesthetic effect of the design intent of the contract documents, or are otherwise deficient, Architect will inform the Contractor, who shall make changes as directed at no additional cost to the Contract amount.
10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 013300 - Submittal Procedures.

G. Coordination Drawing Process: Prepare coordination drawings in the following manner:
1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.
2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.

5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.

H. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:
   1. File Preparation Format:
      a. CAD drawing files (.DWG) or BIM model files (.RVT) or other format as mutually agreed upon by all parties responsible for preparation of coordination drawings.
   2. File Submittal Format: Submit or post coordination drawing files using PDF format.
   3. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
      a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
      b. Digital Data Software Program: Drawings files are available in BIM and/or CAD format in the latest software versions.
      c. Contractor(s) shall execute an indemnification/hold-harmless document as provided by the Architect prior to the distribution of digital data files.

1.07 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
   1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
   2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.
   3. If the Architect must prepare “responses to Contractor’s Requests for Information” (RFI’s) where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or Project correspondence or documentation the Owner will back-charge the Contractor for all costs associated with the additional Contract Administration Services provided by the Architect.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
   1. Project name.
   2. Name of Architect and Construction Manager.
   3. Architect's Project number.
   4. Date.

5. Name of Contractor.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Form bound in Project Manual or Software-generated form with substantially the same content as indicated above, acceptable to Architect.
   1. Attachments shall be electronic files in PDF format.

D. Architect's and Construction Manager's Action: Architect and Construction Manager will review each RFI, determine action required, and respond. Allow (7) seven calendar days for Architect's response for each RFI. RFIs received by Architect or Construction Manager after 1:00 p.m. will be considered as received the following working day.
   1. The following Contractor-generated RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for approval of Contractor's means and methods.
      d. Requests for coordination information already indicated in the Contract Documents.
      e. Requests for adjustments in the Contract Time or the Contract Sum.
      f. Requests for interpretation of Architect's actions on submittals.
      g. Incomplete RFIs or inaccurately prepared RFIs.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect or Construction Manager of additional information.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within (5) five days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly and at each job meeting. Use software log that is part of Project management software which includes not less than the following:
   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Architect and Construction Manager.
   4. RFI number, including RFIs that were returned without action or withdrawn.
   5. RFI description.

6. Date the RFI was submitted.
7. Date Architect and Construction Manager response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

F. On receipt of Architect's and Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within (3) three days if Contractor disagrees with response.

1.08 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's BIM model will be provided by Architect for Contractor's use during construction.
   1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
   2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
   3. Digital Drawing Software Program: Contract Drawings are available in Revit.
   4. Contractor shall execute a data licensing agreement in the form of Agreement form acceptable to Owner and Architect].
      a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of Agreement acceptable to Owner and Architect.

B. Web-Based Project Management Software Package: Use Architect's web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.
   1. Web-based Project management software includes, at a minimum, the following features:
      a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
      b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
      c. Document workflow planning, allowing customization of workflow between project entities.
      d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
      e. Track status of each Project communication in real time, and log time and date when responses are provided.
      f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.
      g. Processing and tracking of payment applications.
      h. Processing and tracking of contract modifications.
      i. Creating and distributing meeting minutes.

j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
k. Management of construction progress photographs.
l. Mobile device compatibility, including smartphones and tablets.

2. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.

C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.09 FIELD SUPERVISION

A. The Contractor shall have a full-time superintendent present on site to supervise its work and that of its Subcontractors. At no time shall the Contractor or its Subcontractors be working on the Project without the Contractor's superintendent present. The Contractor shall submit the name of its Superintendent to the Architect and Construction Manager prior to commencement of work.

B. Each Prime Contractor shall have a full-time superintendent present on site to supervise its work and that of its subcontractors and to coordinate its own work with that of other Prime Contractors. At no time shall any Prime Contractor or its Subcontractors be working on the Project without the Prime Contractor's superintendent present. Each Prime Contractor shall submit the name of its Superintendent to the Architect and Construction Manager prior to commencement of work.

C. Field Supervisor shall be fluent in the English language to ensure full communications can be achieved during daily operations between Contractor, Architect, and Owner.

1.10 PROJECT MEETINGS

A. Job Meetings shall be held at the Site, or elsewhere as designated by the Architect or Construction Manager, for each project at least once every two (2) weeks on a prescribed date and time of each month, or more often, as directed and required by the Architect or Construction Manager.

B. It will be mandatory for the President of the Contractor to be present or have its representative present who has written authorization from the President of the Contractor to approve and sign-off on updated Contractors' Construction Schedule, etc. at every Meeting for project, unless previously excused by the Architect. A Contractor more than fifteen (15) minutes late to any meeting shall be viewed as not in attendance.

C. General: Construction Manager shall schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Construction Manager will inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notification to all parties of scheduled meeting dates and times shall be provided a minimum of (7) seven days prior to meeting. Contractor(s) will inform its subcontractors, suppliers, participants and others involved whose presence is required at scheduled meetings and times.
2. Agenda: Construction Manager may prepare a meeting agenda to distribute to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved and distribute the meeting minutes to everyone concerned, including Architect, Construction Manager, and Owner, within (7) seven calendar days of the meeting.

D. Preconstruction Conference: Contractor Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to all interested parties, but no later than (15) fifteen days after execution of the Agreement.
   1. Attendees: Authorized representatives of Architect, Construction Manager, and Owner, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Responsibilities and personnel assignments.
      b. Tentative construction schedule prepared by the Contractor.
      c. Phasing.
      d. Critical work sequencing and long lead items.
      e. Designation of key personnel and their duties.
      f. Lines of communications.
      g. Procedures for processing field decisions and Change Orders.
      h. Procedures for RFIs.
      i. Procedures for testing and inspecting.
      j. Procedures for processing Applications for Payment.
      k. Distribution of the Contract Documents.
      l. Submittal procedures.
      m. Preparation of Record Documents.
      n. Use of the premises and any existing building.
      o. Work restrictions.
      p. Working hours.
      q. Owner's occupancy requirements.
      r. Responsibility for temporary facilities and controls.
      s. Procedures for moisture and mold control.
      t. Procedures for disruptions and shutdowns.
      u. Construction waste management and recycling.
      v. Parking availability.
      w. Office, work, and storage areas.
      x. Equipment deliveries and priorities.
      y. First aid.

z. Security.
aa. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

E. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Construction Manager of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
a. Contract Documents.
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Sustainable design requirements.
i. Review of mockups.
j. Possible conflicts.
k. Compatibility requirements.
l. Time schedules.
m. Weather limitations.
n. Manufacturer's written instructions.
o. Warranty requirements.
p. Compatibility of materials.
q. Acceptability of substrates.
r. Temporary facilities and controls.
s. Space and access limitations.
t. Regulations of authorities having jurisdiction.
u. Testing and inspecting requirements.
v. Installation procedures.
w. Coordination with other work.
x. Required performance results.
y. Protection of adjacent work.
z. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

F. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 30 days prior to the scheduled date of Substantial Completion.
   1. Conduct the conference to review requirements and responsibilities related to Project closeout.
   2. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
      a. Preparation of Record Documents.
      b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
      c. Procedures for completing and archiving web-based Project software site data files.
      d. Submittal of written warranties.
      e. Requirements for completing sustainable design documentation.
      f. Requirements for preparing operations and maintenance data.
      g. Requirements for delivery of material samples, attic stock, and spare parts.
      h. Requirements for demonstration and training.
      i. Preparation of Contractor's punch list.
      j. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
      k. Submittal procedures.
      l. Coordination of separate contracts.
      m. Owner's partial occupancy requirements.
      n. Installation of Owner's furniture, fixtures, and equipment.
      o. Responsibility for removing temporary facilities and controls.
   4. Minutes: Entity conducting meeting will record and distribute meeting minutes.

G. Progress Meetings: Construction Manager will conduct progress meetings at a minimum, biweekly intervals on a prescribed date and time, or more often as directed or required by the Architect.
   1. Coordinate dates of meetings with preparation of payment requests.
   2. Attendees: In addition to representatives of Owner, Construction Manager, Architect, and their consultants, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to

ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Resolution of BIM component conflicts.
4) Status of submittals.
5) Status of sustainable design documentation.
6) Deliveries.
7) Off-site fabrication.
8) Access.
9) Site use.
10) Temporary facilities and controls.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) Status of RFIs.
16) Status of Proposal Requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
   a. Schedule Updating: Contractor(s) shall revise the construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule within (4) four days of the concurrent progress meeting.

H. Coordination Meetings: Contractor shall conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
   1. Attendees: In addition to representatives of Owner, Construction Manager, Architect, and their consultants, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss

whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

c. Review present and future needs of each contractor present, including the following:
   1) Interface requirements.
   2) Sequence of operations.
   3) Resolution of BIM component conflicts.
   4) Status of submittals.
   5) Deliveries.
   6) Off-site fabrication.
   7) Access.
   8) Site use.
   9) Temporary facilities and controls.
   10) Work hours.
   11) Hazards and risks.
   12) Progress cleaning.
   13) Quality and work standards.
   14) Status of RFIs.
   15) Proposal Requests.
   16) Change Orders.
   17) Pending changes.

3. Reporting: The contractor shall record meeting results and distribute copies to everyone in attendance including Owner, Architect and Construction Manager and to others affected by decisions or actions resulting from each meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Preliminary Construction Schedule.
   2. Contractor's Construction Schedule.
   3. Submittals Schedule.
   4. Daily construction reports.
   5. Material location reports.
   6. Field condition reports.
   7. Special reports.

1.03 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

G. Major Area: A story of construction, a separate building, or a similar significant construction element.

H. Milestone: A key or critical point in time for reference or measurement.

1.04 SUBMITTALS

A. Submittals Schedule: Submit (2) two copies of schedule. Arrange the following information in a tabular format:
1. Scheduled date for first submittal.
2. Specification Section number and title.
3. Submittal category (action or informational).
4. Name of subcontractor.
5. Description of the Work covered.
6. Scheduled date for Architect's final release or approval.

B. Preliminary Construction Schedule: Submit digital PDF copies.

C. Contractor's Construction Schedule: Submit digital PDF copies of initial schedule, large enough to show entire schedule for entire construction period.

D. CPM Reports: Concurrent with CPM schedule, submit digital PDF c of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.

E. Daily Construction Reports: Submit digital PDF copies with each monthly application for payment.

F. Material Location Reports: Submit digital PDF copies with each monthly application for payment.

G. Field Condition Reports: Submit digital PDF copies at time of discovery of differing conditions.

H. Special Reports: Submit digital PDF copies at weekly intervals.

1.05 QUALITY ASSURANCE

A. Pre-scheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review

methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Discuss constraints, including phasing, work stages, area separations, interim milestones, and partial Owner occupancy.
2. Review schedule for work of Owner's separate contracts.
3. Review requirements for tests and inspections by independent testing and inspecting agencies.
4. Review time required for completion and startup procedures.
5. Review and finalize list of construction activities to be included in schedule.
6. Review submittal requirements and procedures.
7. Review procedures for updating schedule.

1.06 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 PRODUCTS

2.01 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, delivery, and installation when establishing dates.
   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for Notice to Proceed to date of Substantial and Final Completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat separate areas as a separate numbered activity for each principal element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than (10) ten calendar days, unless specifically allowed by Architect and Construction Manager.

2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than (60) sixty days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
4. Startup and Testing Time: Include not less than (10) ten calendar days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's and Construction Manager's administrative procedures necessary for certification of Substantial Completion and for Township inspections and issuance of a TCO or CO.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Work Restrictions: Show the effect of the following types of items on the schedule including, but not limited to:
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.
      d. Partial occupancy before Substantial Completion.
      e. Use of premises restrictions.
      f. Provisions for future construction.
      g. Seasonal variations.
      h. Environmental control.
      i. Local ordinances.
   3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
      a. Subcontract awards.
      b. Submittals.
      c. Purchases.
      d. Mockups.
      e. Fabrication.
      f. Sample testing.
      g. Deliveries.
      h. Installation.
      i. Tests and inspections.
      j. Adjusting.
      k. Curing.
      l. Startup and placement into final use and operation.
   4. Area Separations: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for, but not limited to, the following:
      a. Structural completion.
      b. Permanent space enclosure.

c. Completion of mechanical installation.
d. Completion of electrical installation.
e. Substantial Completion.

D. Milestones: Include any milestones indicated in the Contract Documents, in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

F. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

2.03 PRELIMINARY CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within (7) seven days of date established for the Notice to Proceed.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first (60) sixty calendar days of construction. Include skeleton diagram for the remainder of the Work.

2.04 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Preliminary Bar-Chart-Schedule: Submit schedule within (15) fifteen days of date established for the Notice to Proceed. Outline significant construction activities for the first (60) sixty days of construction. Include skeleton diagram for the remainder of the Work based on indicated activities.

C. CPM Schedule: Prepare Contractor's Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.
1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than (30) thirty days after date established for the Notice to Proceed.
2. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
3. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
4. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
5. Use "one workday" as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
   a. Preparation and processing of submittals.
   b. Mobilization and demobilization.
   c. Purchase of materials.
   d. Delivery.
   e. Fabrication.
   f. Utility interruptions.
   g. Installation.
   h. Work by Owner that may affect or be affected by Contractor's activities.
   i. Testing .
2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
   a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
9. Average size of workforce.

F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
4. Changes in activity durations in workdays.
5. Changes in the critical path.
6. Changes in total float or slack time.
7. Changes in the Contract Time.

2.05 REPORTS

A. Daily Construction Reports: Contractor shall prepare a daily construction report recording the following information concerning events at Project site: Failure to comply is cause for docking payment.
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   12. Emergency procedures.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial Completions and occupancies.
   19. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for information in Section 006000 - Project Forms, Form 006010 - Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.06 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within weekly of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Scheduling Coordinator: Project Coordinator shall engage a skilled scheduling coordinator with experience to provide planning, evaluation, and reporting techniques using CPM scheduling.
   1. Submit qualifications.
   2. Meetings: Scheduling coordinator shall attend all meetings related to Project progress, alleged delays, and time impact.

B. Meeting to Review and approve Contractor's Construction Schedule: (14) fourteen calendar days after receipt of the Contractor's Construction Schedule, the Owner, Architect, and Construction Manager, President of the Company or Corporation, of the Contractor, shall meet to review, agree and sign off on the Contractor's Construction in the presence of the Owner, Architect, and Construction Manager. Failure of the Contractor to sign off on the Contractor's Construction Schedule shall result in the assessment of liquidated damages as outlined in Section 006212 - Supplementary Conditions - AIA A201-2017, article 8.4.

C. Contractor's Construction Schedule Updating: At, at least, every 30 calendar days or as often as deemed necessary by the Architect, update schedule to reflect actual construction progress and activities and to recommend changes in the sequencing and scheduling. Issue schedule (1) one week before each regularly scheduled progress meeting. Upon (7) seven working days of the Architect's request, submit an updated schedule to the Architect.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate Actual Completion percentage for each activity.

D. The updated Contractors' Construction Schedule will be reviewed at each Job Meeting. Contractor is required to have a representative present at the Job Meeting with written authorization from the President of the Company or Corporation to review, agree upon and sign-off on any approved and agreed upon changes to the updated Contractors' Construction Schedule. Failure by Contractor to provide timely input in the time required to update the schedule shall result in the liability of the Contractor for liquidated damages. In addition, payment to the Contractor may result in the withholding of payments to the Contractor, and in the liability of the Contractor for liquidated damages, for failure of the Project to be completed within the designated time due to the Contractor's failure to cooperate. Contractor shall be responsible for meeting the overall Project's phased completion date(s) and overall substantial completion date.

E. Any acceleration of the Contractor's Construction Schedule shall be agreed upon by the Contractor and approved by the Architect and Construction Manager in writing.

F. In the absence of a signed change order approving an extension of time, all Contractor Construction Schedule updates must show substantial completion date(s) consistent with the date(s) required in Section 011000 – Summary, paragraph 1.5.D. Changes in logistics or duration shall not be made, except for good cause, and shall not result in an extension of the time for substantial completion. In the event certain aspects of the work fall behind the Contractor's Construction Schedule, the Contractor(s) responsible shall, in coordination, and consultation with all other Contractors, will develop a

recovery plan to revise logistics, add manpower resources to reduce durations, expedite procurement or advance start of activities, to get the project back on a schedule that will assure completion in accordance with the substantial completion date.

G. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, testing agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms or temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Preconstruction photographs.
   2. Periodic construction photographs.

B. Related Requirements:
   1. Section 013300 - Submittal Procedures for submitting photographic documentation.
   2. Section 017700 - Closeout Procedures for submitting photographic documentation as project record documents at Project closeout.
   3. Section 017900 - Demonstration and Training for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.03 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building for Architect’s notation of vantage points marked for location and direction of each photograph recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation. Architect shall select a minimum of (6) six views to be photographed and included with each Application for Payment.

B. Digital Photographs:
   1. Digital Camera: Minimum sensor resolution of 8 megapixels.
   2. Format: Minimum resolution of 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
   3. Identification: Provide the following information with each image description in file metadata tag:
      a. Date photograph was taken.
      b. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
      c. Unique sequential numerical identifier.

1.04 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner and Architect for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

B. Digital Video Recordings: Provide high-resolution, digital video in format acceptable to Architect/Owner.

PART 3 EXECUTION

3.01 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
   1. Date and Time: Include date and time in file name for each image.
   2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Construction Manager.

C. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect or Construction Manager.
   1. Flag construction limits before taking construction photographs.
   2. Take a sufficient number of photographs to show existing conditions adjacent to property before starting the Work.
   3. Take a sufficient number of photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
   4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Submit periodic construction photographs with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

E. Architect or Construction Manager-Directed Construction Photographs: From time to time, the Architect or Construction Manager may instruct photographer about number and frequency of photographs and general directions on vantage points. Select actual vantage points and take photographs to show the status of construction and progress since last photographs were taken.

F. Additional Photographs: Architect or Construction Manager may request photographs in addition to periodic photographs specified.
   1. In emergency situations, take additional photographs within 24 hours of request.
   2. Circumstances that could require additional photographs include, but are not limited to, the following:
      a. Special events planned at Project site.
      b. Immediate follow-up when on-site events result in construction damage or losses.
      c. Photographs to be taken at fabrication locations away from Project site..
      d. Substantial Completion of a major phase or component of the Work.
      e. Extra record photographs at time of final acceptance.
      f. Owner's request for special publicity photographs.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Submittal schedule requirements.
   2. Administrative and procedural requirements for submittals.

B. Related Requirements:
   1. Section 012900 - Payment Procedures for submitting Applications for Payment and the schedule of values.
   2. Section 013100 - Project Management and Coordination for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
   3. Section 013200 - Construction Progress Documentation for submitting schedules and reports, including Contractor's construction schedule.
   4. Section 013233 - Photographic Documentation for submitting preconstruction photographs, periodic construction photographs, and Final Completion construction photographs.
   5. Section 014000 - Quality Requirements for submitting test and inspection reports, and schedule of tests and inspections.
   6. Section 017700 - Closeout Procedures for submitting closeout submittals and maintenance material submittals.
   7. Section 017823 - Operation and Maintenance Data for submitting operation and maintenance manuals.
   8. Section 017839 - Project Record Documents 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
   9. Section 017900 - Demonstration and Training for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.03 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may

be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.04 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and Construction Manager and additional time for handling and reviewing submittals required by those corrections.
   1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
   2. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.
      a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
   3. Format: Arrange the following information in a tabular format:
      a. Scheduled date for first submittal.
      b. Specification Section number and title.
      c. Submittal Category: Action; informational.
      d. Name of subcontractor.
      e. Description of the Work covered.
      f. Scheduled date for Architect's and Construction Manager's final release or approval.
      g. Scheduled dates for purchasing.
      h. Scheduled date of fabrication.
      i. Scheduled dates for installation.
      j. Activity or event number.

B. No extension of contract time will be considered or authorized because of failure to transmit submittals far enough in advance of the work to permit processing.

1.05 SUBMITTAL FORMATS

A. Submittal Information: All submittals shall include the Architects “Submittal Cover Sheet” as provided in the Project Manual, or approved document equivalent; and shall contain the following information in each submittal:
   1. Project name.
   2. Date.
   3. Name of Architect.
   4. Name of Construction Manager.
   5. Name of Contractor.
   6. Name of firm or entity that prepared submittal.
   7. Names of subcontractor, manufacturer, and supplier.
   8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.

9. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
10. Drawing number and detail references, as appropriate.
11. Indication of full or partial submittal.
12. Location(s) where product is to be installed, as appropriate.
13. Other necessary identification.
14. Remarks.
15. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect and Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as a PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number and a brief description.
   1. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using the Architect's "Submittal Cover Sheet" as included in Project Manual and Contractor's transmittal form. The Architect will return submittals, without review, received from sources other than the Contractor and those submittals received without the Architect's "Submittal Cover Sheet" and/or Contractor's transmittal form.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.06 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
   1. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
   4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of a fully prepared and complete submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow fifteen (15) business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect, through Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Resubmittal Review: Allow fifteen (15) business days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow twenty (20) business days for initial review of each submittal. Sequential reviews may include, but are not limited to the following:
      a. Structural foundations and base plates.
      b. Structural steel framing and decking.
      c. HVAC systems and components.
      d. Plumbing systems and components.
      e. Electrical systems and components.
   5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow fifteen (15) business days for review of each submittal. Submittal will be returned to Architect, through Construction Manager before being returned to Contractor.
      a. Submit one copy of submittal to concurrent reviewer(s) in addition to copies to Architect and Construction Manager.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked with approval notation from Architect's and Construction Manager's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

1.07 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    a. Dimensions
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Rough-in and setting diagrams.
    e. Shop work manufacturing instruction.
    f. Templates and patterns.
    g. Design calculations.
    h. Schedules.
    i. Compliance with specified standards.
    j. Notation of coordination requirements.
    k. Notation of dimensions established by field measurement.
    l. Relationship and attachment to adjoining construction clearly indicated.
    m. Seal and signature of professional engineer if specified, within the state Project is located.
    n. Wiring diagrams showing field-installed wiring, including power, signal and control wiring.
    o. Wiring diagrams differentiating between manufacturer-installed and field-installed wiring and responsibilities for who makes the final connections.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
    a. Submit Shop Drawings to Architect and Construction Manager via email or other electronic media transfer.
    b. For larger projects were shop drawing quantities and file sizes may limit the amount of media allowed to be electronically transferred, Shop Drawing packages may be broken down into smaller groups. In this case, file names should be clearly identified with a description (i.e. Part 1, Part 2, etc.) to alert recipients to the receipt of multiple files.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
    1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
    2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
        a. Project name and submittal number.
        b. Generic description of Sample.
        c. Product name and name of manufacturer.
        d. Sample source.
        e. Number and title of applicable Specification Section.
        f. Specification paragraph number and generic name of each item.
    3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
    4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
        a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
        b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
    5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
        a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Submit one directly to Owner and one to Architect. Architect will return submittal with options selected.
    6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit (2) two sets of Samples. Architect will retain one Sample set; remainder will be provided to the Owner to be retained on site for future verification.
    1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
    2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least (3) three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
    1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
    2. Manufacturer and product name, and model number if applicable.
    3. Number and name of room or space.
    4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:
    1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
    2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
    3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
    4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
    5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
    6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1 on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:
    1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of

compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.

2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.08 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
    1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF files and (2) two paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
    1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.
    2. Responsible design professional shall be licensed in the state which the Project is located.

1.09 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Construction Manager.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp or indication in web-based Project management software. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   1. Architect and Construction Manager will not review submittals received from Contractor that do not have Contractor's review and approval, and will return the same without action.

1.10 ARCHITECT'S AND CONSTRUCTION MANAGER'S REVIEW

A. Action Submittals: Architect and Construction Manager will review each submittal, indicate corrections or revisions required, and return.
   1. Submittals by Web-Based Project Management Software: Architect and Construction Manager will indicate, on Project management software website, the appropriate action.
      a. Actions taken by indication on Project management software website have the following meanings:
         1) Approved: Submittal contents have been reviewed without comment. Resubmission is not required.
         2) Approved as Noted: Submittal contents have been reviewed with comments included. Resubmission is not required, unless specifically directed by Architect or Construction Manager for purposes of ‘record’ or other indicated purpose.
         3) Revise and Resubmit: Submittal contents have been reviewed and require resubmission based on the quantity or content of the comments included. Contractor shall not release material until resubmission is made with an ‘Approved’ or Approved as Noted’ result.
         4) Rejected: Submittal contents have been reviewed and found to be in non-conformance with the requirements of the contract drawings and/or specifications, lack sufficient information for a complete review or as otherwise noted in the Architect or Construction Manager comments. Contractor shall not release material until resubmission is made with an ‘Approved’ or Approved as Noted’ result.
         5) Information/Record Only: Submittal contents is not required or is of a non-reviewable nature. At the Architect’s discretion, the submittal may be returned without action or retains for record purposes only.

B. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect and Construction Manager will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect and Construction Manager.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect and Construction Manager will return without review submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

G. Whether specifically indicated or not on the returned submittal, the Architect's review does not include review of Material Safety Data Sheets (MSDS) where submitted with other received submittal information.
   1. MSDS information shall always be maintained by the Contractor's field personnel and kept up to date. Include and catalog new MSDS sheets as materials are brought onto each Project and/or site.
   2. Record copies of MSDS information shall be required to be organized into a Project binder for each individual Project and/or site. Duplicate copies shall be provided to the Owner's designated representative.

1.11 CONTRACTOR'S USE OF ARCHITECT'S ELECTRONIC DIGITAL DATA FILES

A. General: At Contractor's written request, copies of Architect's digital data files may be conditionally provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:
   1. Contractor will be required to sign an Indemnification and Hold Harmless Agreement in form provided by the Architect for the use of original electronic digital data created by the Architect.
   2. Electronic digital data files will be provided only for the specific purpose of providing a reference document to the Contractor to be used for backgrounds for the completion by the Contractor of shop drawings only.
   3. The Contractor shall agree the electronic digital data information is for reference purposes only and that the Architect provides no warranty of any kind, written or implied, as to the completeness or accuracy of the electronic digital data files.
   4. The Contractor shall agree to hold all information contained in the electronic digital data files confidential and protect it against use by others.
   5. The Contractor shall be required to indemnify and hold harmless the Architect, its principals, employees and consultants in accordance with all terms and conditions listed in the Architect's Indemnification and Hold Harmless Agreement.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
   3. Requirements for Contractor to provide quality-assurance and quality-control services required by Owner, Architect, Construction Manager, or authority having jurisdiction are not limited by provisions of this Section.

C. Related Requirements:
   1. Section 012100 - Allowances for testing and inspection allowances.

1.03 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of (5) five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
   1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.
   1. Mockups are used for one or more of the following:
      a. Verify selections made under Sample submittals.
      b. Demonstrate aesthetic effects.
      c. Demonstrate the qualities of products and workmanship.
      d. Demonstrate successful installation of interfaces between components and systems.
      e. Perform preconstruction testing to determine system performance.
   2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
   3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect or Construction Manager.

1.04 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the

products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.05 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.06 INFORMATIONAL SUBMITTALS

A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.

B. Qualification Data: For Contractor's quality-control personnel.

C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
   1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
   2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.
   6. Number of tests and inspections required.
   7. Time schedule or time span for tests and inspections.
   8. Requirements for obtaining samples.
   9. Unique characteristics of each quality-control service.

F. Reports: Prepare and submit certified written reports and documents as specified.

G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.07 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Plan, General: Submit quality-control plan within (10) ten days of Notice to Proceed, and not less than (5) five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
   1. Project quality-control manager may also serve as Project superintendent.

C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
   1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
   2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
   3. Owner-performed tests and inspections indicated in the Contract Documents.

E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.08 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
   1. Date of issue.
   2. Project title and number.

3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.09 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
   1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Special Inspector Qualifications: An individual certified in accordance with the administrative provisions of the New Jersey Uniform Construction Code, article 5:23-5.19G Special Inspector Requirements and having successfully completed artical 5:23-5.23B Examination Requirements for Special Inspectors, and having received a certificate certifying the individual is a Certified Special Inspector.

I. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

K. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:
   1. Provide test specimens representative of proposed products and construction.
   2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.

5. When testing is complete, remove test specimens and test assemblies, [and]mockups; do not reuse products on Project.
6. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect[and Commissioning Authority][, through Construction Manager], with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

L. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect (7) seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's and Owner's approval of mockups before starting corresponding Work, fabrication, or construction.
   a. Allow (7) seven days for initial review and each re-review of each mockup.
7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Payment for these services will be made from testing and inspection allowances specified in Section 012100 "Allowances," as authorized by Change Orders.
3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 48 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect's, Construction Manager's, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect's, Construction Manager's, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.

4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agency, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Inspector Qualifications: An individual certified in accordance with the administrative provisions of the New Jersey Uniform Construction Code, article 5:23-5.19G Special Inspector Requirements and having successfully completed article 5:23-5.23B Examination Requirements for Special Inspectors, and having received a certificate certifying the individual is a Certified Special Inspector.

B. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect, Construction Manager, and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, , with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

C. Certified Special Inspectors: A individual certified in accordance with the administrative provisions of the New Jersey Uniform Construction Code, article 5:23-5.19G Special

Inspector Requirements and having successfully completed article 5:23-5.23B Examination Requirements for Special Inspectors, and having received a certificate certifying the individual is a Certified Special Inspector to conduct, supervise and evaluate test or inspections for the following in:

1. Structural Steel and welding special inspector: Structural Steel and welding special inspectors are authorized to carry out field inspections pursuant to section 1704.3 of the IBC International Building, latest adopted version. (New Jersey edition).
2. Concrete special inspector: Concrete special inspectors are authorized to carry out field inspections pursuant to section 1704.4 of the IBC International Building, latest adopted version. (New Jersey edition).
3. Structural Masonry special inspector: Structural Masonry special inspectors are authorized to carry out field inspections pursuant to section 1704.5 of the IBC International Building, latest adopted version. (New Jersey edition).
4. Spray-applied fireproofing special inspector: Spray-applied fireproofing special inspectors are authorized to carry out field inspections pursuant to section 1704.11 of the IBC International Building, latest adopted version. (New Jersey edition).
5. Exterior insulation and finish system (EIFS) special inspector: Exterior insulation and finish system (EIFS) special inspectors are authorized to carry out field inspections pursuant to section 1704.12 of the IBC International Building, latest adopted version. (New Jersey edition).

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to Architect.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Construction Manager's, and authorities' having jurisdiction reference during normal working hours.
   1. Submit log at Project closeout as part of Project Record Documents.

3.02 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams

that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.03 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.04 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.
   1. AABC - Associated Air Balance Council; www.aabc.com.
   2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
   3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
   4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
   5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
   6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
   7. ABMA - American Boiler Manufacturers Association; www.abma.com.
   8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
   9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
   10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
   11. AF&PA - American Forest & Paper Association; www.afandpa.org.
   12. AGA - American Gas Association; www.aga.org.
   13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
   14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
   15. AI - Asphalt Institute; www.asphaltinstitute.org.
   16. AIA - American Institute of Architects (The); www.aia.org.
   17. AISC - American Institute of Steel Construction; www.aisc.org.
   18. AISI - American Iron and Steel Institute; www.steel.org.
   19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
   20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
   21. ANSI - American National Standards Institute; www.ansi.org.
   22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
   23. APA - APA - The Engineered Wood Association; www.apawood.org.
   24. APA - Architectural Precast Association; www.archprecast.org.
   25. API - American Petroleum Institute; www.api.org.
   26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
   27. ARI - American Refrigeration Institute; (See AHRI).
   28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
   29. ASCE - American Society of Civil Engineers; www.asce.org.

30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
34. ASSP - American Society of Safety Professionals (The); www.assp.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AVIXA - Audiovisual and Integrated Experience Association; (Formerly: Infocomm International); www.soundandcommunications.com.
38. AWEA - American Wind Energy Association; www.awea.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWPA - American Wood Protection Association; www.awpa.com.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
50. CDA - Copper Development Association; www.copper.org.
51. CE - Conformite Europeenne; www.ec.europa.eu/growth/single-market/ce-marking.
52. CEA - Canadian Electricity Association; www.electricity.ca.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.compositepanel.org.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csa-group.org.
65. CSI - Construction Specifications Institute (The); www.csiresources.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTA - Consumer Technology Association; www.cta.tech.

68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.coolingtechnology.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHA - Decorative Hardwoods Association; (Formerly: Hardwood Plywood & Veneer Association); www.decorativehardwoods.org.
72. DHI - Door and Hardware Institute; www.dhi.org.
73. ECA - Electronic Components Association; (See ECIA).
74. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
75. ECIA - Electronic Components Industry Association; www.ecianow.org.
76. EIA - Electronic Industries Alliance; (See TIA).
77. EIMA - EIFS Industry Members Association; www.eima.com.
78. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
79. EOS/ESD Association; (Electrostatic Discharge Association); www.esda.org.
80. ESTA - Entertainment Services and Technology Association; (See PLASA).
81. ETL - Intertek (See Intertek); www.intertek.com.
82. EVO - Efficiency Valuation Organization; www.evo-world.org.
83. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
84. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
85. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
86. FM Approvals - FM Approvals LLC; www.fmglobal.com.
87. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
88. FRSA - Florida Roofing, Sheet Metal Contractors Association, Inc.; www.floridaroof.com.
89. FSA - Fluid Sealing Association; www.fluidsealing.com.
90. FSC - Forest Stewardship Council U.S.; www.fscus.org.
91. GA - Gypsum Association; www.gypsum.org.
92. GANA - Glass Association of North America; (See NGA).
93. GS - Green Seal; www.greenseal.org.
94. HI - Hydraulic Institute; www.pumps.org.
95. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
96. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
97. HPVA - Hardwood Plywood & Veneer Association; (See DHA).
98. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
99. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
100. IAS - International Accreditation Service; www.iasonline.org.
101. ICBO - International Conference of Building Officials; (See ICC).
102. ICC - International Code Council; www.iccsafe.org.
103. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
104. ICPA - International Cast Polymer Association; www.theicpa.com.
105. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
106. IEC - International Electrotechnical Commission; www.iec.ch.

107. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
108. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
109. IESNA - Illuminating Engineering Society of North America; (See IES).
110. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
111. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
112. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
113. II - Infocomm International; (See AVIXA).
114. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
115. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
116. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
117. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
118. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
119. ISO - International Organization for Standardization; www.iso.org.
120. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
121. ITU - International Telecommunication Union; www.itu.int.
122. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
123. LMA - Laminating Materials Association; (See CPA).
124. LPI - Lightning Protection Institute; www.lightning.org.
125. MBMA - Metal Building Manufacturers Association; www.mbma.com.
126. MCA - Metal Construction Association; www.metalconstruction.org.
127. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
128. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
129. MHIA - Material Handling Industry of America; www.mhia.org.
130. MIA - Marble Institute of America; (See NSI).
131. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
132. MPI - Master Painters Institute; www.paintinfo.com.
133. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
134. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
135. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
136. NADCA - National Air Duct Cleaners Association; www.nadca.com.
137. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
138. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
139. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
140. NBI - New Buildings Institute; www.newbuildings.org.
141. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
142. NCMA - National Concrete Masonry Association; www.ncma.org.
143. NEBB - National Environmental Balancing Bureau; www.nebb.org.
144. NECA - National Electrical Contractors Association; www.necanet.org.
145. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.

146. NEMA - National Electrical Manufacturers Association; www.nema.org.
147. NETA - InterNational Electrical Testing Association; www.netaworld.org.
148. NFHS - National Federation of State High School Associations; www.nfhs.org.
149. NFPA - National Fire Protection Association; www.nfpa.org.
150. NFPA - NFPA International; (See NFPA).
151. NFRC - National Fenestration Rating Council; www.nfrc.org.
152. NGA - National Glass Association (The); (Formerly: Glass Association of North America); www.glass.org.
153. NHLA - National Hardwood Lumber Association; www.nhla.com.
154. NLGA - National Lumber Grades Authority; www.nlga.org.
155. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
156. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
157. NRCA - National Roofing Contractors Association; www.nrca.net.
158. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
159. NSF - NSF International; www.nsf.org.
160. NSI - National Stone Institute; (Formerly: Marble Institute of America); www.naturalstoneinstitute.org.
161. NSPE - National Society of Professional Engineers; www.nspe.org.
162. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
163. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
164. NWFA - National Wood Flooring Association; www.nwfa.org.
165. NWRA - National Waste & Recycling Association; www.wasterecycling.org
166. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
167. PDI - Plumbing & Drainage Institute; www.pdionline.org.
168. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
169. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
170. RFCI - Resilient Floor Covering Institute; www.rfci.com.
171. RIS - Redwood Inspection Service; www.redwoodinspection.com.
172. SAE - SAE International; www.sae.org.
173. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
174. SDI - Steel Deck Institute; www.sdi.org.
175. SDI - Steel Door Institute; www.steeldoor.org.
176. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
177. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
178. SIA - Security Industry Association; www.siaonline.org.
179. SJI - Steel Joist Institute; www.steeljoist.org.
180. SMA - Screen Manufacturers Association; www.smainfo.org.
181. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
182. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
183. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
184. SPIB - Southern Pine Inspection Bureau; www.spib.org.
185. SPRI - Single Ply Roofing Industry; www.spri.org.
186. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
187. SSINA - Specialty Steel Industry of North America; www.ssina.com.

188. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
189. STI - Steel Tank Institute; www.steeltank.com.
190. SWI - Steel Window Institute; www.steelwindows.com.
191. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
192. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
193. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
194. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
195. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
196. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
197. TMS - The Masonry Society; www.masonrysociety.org.
198. TPI - Truss Plate Institute; www.tpinst.org.
199. TPI - Turfgrass Producers International; www.turfgrasssod.org.
200. TRI - Tile Roofing Institute; www.tileroofing.org.
201. UL - Underwriters Laboratories Inc.; www.ul.com.
202. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
203. USAV - USA Volleyball; www.usavolleyball.org.
204. USGBC - U.S. Green Building Council; www.usgbc.org.
205. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
206. WA - Wallcoverings Association; www.wallcoverings.org.
207. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
208. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
209. WDMA - Window & Door Manufacturers Association; www.wdma.com.
210. WI - Woodwork Institute; www.wicnet.org.
211. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
   1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
   2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
   3. ICC - International Code Council; www.iccsafe.org.
   4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
   1. COE - Army Corps of Engineers; www.usace.army.mil.
   2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
   3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
   4. DOD - Department of Defense; www.quicksearch.dla.mil.
   5. DOE - Department of Energy; www.energy.gov.
   6. EPA - Environmental Protection Agency; www.epa.gov.
   7. FAA - Federal Aviation Administration; www.faa.gov.

8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
   1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.govinfo.gov.
   2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
   3. DSCC - Defense Supply Center Columbus; (See FS).
   4. FED-STD - Federal Standard; (See FS).
   5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
      a. Available from Defense Standardization Program; www.dsp.dla.mil.
      b. Available from General Services Administration; www.gsa.gov.
      c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
   6. MILSPEC - Military Specification and Standards; (See DOD).
   7. USAB - United States Access Board; www.access-board.gov.
   8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
   1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
   2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
   3. CDHS; California Department of Health Services; (See CDPH).

4. CDPH; California Department of Public Health; Indoor Air Quality Program;www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract Documents, including General and Supplementary Conditions and other Division 01 and Technical Specifications, apply to this Section.

1.02 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Specific administrative and procedural minimum actions are specified in this Section, as extensions of provisions in General Conditions and other Contract Documents. These requirements have been included for special purposes as indicated. Nothing in this Section is intended to limit types and amounts of temporary work required, and no omission from this Section will be recognized as an indication by Architect or its Engineers that such temporary activity is not required for successful completion of the Work and compliance with requirements of Contract Documents. Provisions of this Section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions, and support facilities, etc.

C. The types of temporary support facilities required and to be provided includes, but not by way of limitation include:
   1. Security.
   2. Field offices, storage sheds, fabrication sheds.
   3. Sanitary facilities, drinking water, water distribution, drainage, dewatering equipment.
   4. Temporary heating, cooling, ventilation.
   5. Electrical power distribution, lighting.
   6. Enclosure of work, hoisting facilities, ladders, scaffolds, stairs ramps, access ways and roads.
   7. First aid facilities, bulletin board, private and public telephones, clocks, thermometer.
   8. Project identification signs, cleanup facilities, dumpsters and waste disposal services, rodent/pest control and similar miscellaneous general services.
   9. All as may be reasonably required for proficient performance of the work and accommodation of personnel at the site including Construction Manager's, Architect's, and Engineer's personnel.
   10. Include moving, relocation, and reinstallation as may be required to accommodate construction progress.

D. Discontinue and remove temporary support facilities and make incidental similar use of permanent work of the project, only when and in manner authorized by the Architect; and, if not otherwise indicated, immediately before time of Substantial Completion.

Locate temporary support facilities for convenience of users, and for minimum interference with construction activities.

1.03 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary closures.

1.04 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Construction Manager, Architect, occupants of the Project, and authorities having jurisdiction.

B. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1.05 QUALITY ASSURANCE

A. General: In addition to compliance with governing regulations and rules/recommendations of franchised utility companies, comply with specific requirements indicated and with applicable local industry standards for construction work (published recommendations by local consensus "building councils").

B. ANSI Standards: Comply with applicable provisions of ANSI A10-Series standards on construction safety.

C. NFPA Code: Comply with NFPA 241 "Safeguarding Construction, Alteration and Demolition Operations".

D. Environmental Impact Statement: Comply with provisions of Owner's committed EIS, for development and operation of temporary facilities and construction activities.

E. Conservation: In compliance with Owner's policy on energy/materials conservation, install and operate temporary facilities and perform construction activities in manner which reasonably will be conservative and avoid waste of energy and materials including water.

F. ADA and ICC/ANSI Compliance: Construction for this Project must comply with the Americans with Disability Act (ADA) of 2009 and ICC/ANSI A117.1.

G. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

H. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.06 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Establish and initiate the use of each temporary facility at time first reasonably required for proper performance of the Work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

C. Install, operate, maintain, and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.

D. Installers shall verify clearances of all paths at job site leading to final installation locations, and break down the final product components into component assemblies sized accordingly to negotiate all corners, turns, etc., in the path to its final installation location.

E. Contractors will provide their own extension cords, hoses, etc. as required for their work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Pavement: Comply with requirements in Pavement Sections.

B. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.76-mm-) (9 gage) thick, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails. Include gates for both personnel and trucks with locks held under strict security control.
   1. Provide vision-proof, weather and wind resistant fabric secured to fence where Owner occupied spaces (ie. classrooms) overlook the work area.

C. Materials for Temporary Work: Lumber, plywood, gypsum board, insulation, paints, etc. required for temporary work shall comply with corresponding specification sections and applicable codes and regulations of in effect at the Project location by authorities having jurisdiction.

D. Temporary Floor Protections: Provide Heavy-Duty temporary floor protection (Ram Board or Equal) under all work areas.

2.02 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile unit(s) with adequate space, suitably furnished, with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of construction personnel. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
2. Conference room of sufficient size to accommodate meetings of (10) individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot square tack board.
3. Drinking water.
4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 78 deg F.
5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

C. Storage and Fabrication Sheds: The Contractor shall provide suitable storage facilities at the site for the proper protection and safe storage of his materials. Such storage facilities must be approved in advance in writing by the Construction Manager or Architect.
   1. Store combustible materials apart from building.

D. Other Contractors requiring storage facilities will supply their own and located where approved by the Construction Manager or Architect.

E. All materials delivered to the premises which are to form a part of the work are to be considered the property of the Owner and must not be removed without the Owner's consent; but the Contractor shall remove all surplus materials upon completion of each phase of the work and as directed by the Construction Manager or Architect.

2.03 FIRE PROTECTION PROVISIONS

A. Fire Extinguishers: Provide Fire protection equipment during the entire construction period as required by the authority having jurisdiction of types, sizes, numbers, and locations as would be reasonably effective in extinguishing fires during early stages, by personnel at Project site. Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures. Post warning and quick instructions at each extinguisher location, and instruct personnel at Project site, at time of their first arrival, on proper use of extinguishers and other available facilities at Project site. Post local fire department call number on each telephone instrument at Project site.

2.04 TEMPORARY UTILITY SERVICES

A. The types of services required include, but not by way of limitation, water, sanitary, electrical power, or lighting. Where possible and reasonable, connect to existing franchised utilities for required services; and comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sanitary Facilities: Provide temporary self-contained toilet units with provisions to remove effluent lawfully, wash facilities, and drinking water with cups for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

C. TEMPORARY WATER SERVICE:
   1. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
      a. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.

D. TEMPORARY ELECTRIC SERVICE:
   1. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.
   2. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
      a. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.03 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for emergency and fire-fighting equipment and access to fire hydrants.

C. Parking: Use designated areas of Owner's existing parking areas for construction personnel.

D. Project Identification and Temporary Signs: Contractor shall provide Project identification and other signs as indicated on drawings. Install signs where indicated or directed to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted. Engage an experienced sign painter to paint graphics on sign as indicated. Construct sign of treated wood framing and posts, and 3/4" plywood panels of exterior type Grade B-C sanded 2 sides. No other signs will be permitted at the Site. Remove the project identification and temporary signs at the completion of the project.
   1. Provide project identification sign showing name of the Project, Owner, Architect, Engineers, Construction Manager, and Contractor(s).
   2. Provide temporary, directional signs for construction personnel and visitors.
   3. Maintain and touchup signs so they are legible at all times.

E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.
   1. The Contractor shall provide waste-collection containers for use by all construction personnel to deposit all rubbish, debris, boxes, crates, etc. The Contractor shall remove and properly dispose of the contents of the waste-collection containers as necessary to keep the progress of the job moving.
   2. The Contractor shall maintain the construction areas as clean as the progress of the work will permit.
      a. The Contractor will clean up all its waste materials, rubbish and debris on a daily basis.
      b. The Contractor will place its waste materials, rubbish and debris outside of building in the waste-collection containers on a daily basis.
      c. The Contractor will broom clean the building a minimum of once a week.
      d. The Contractor will be responsible to keep the public streets, roadway access, construction area, etc. clean and free of debris, mud, snow, ice, materials, etc. at all times during the entire period of construction. If the Contractor does not adhere to this requirement, the Owner will engage a water power sweeping contractor to thoroughly clean the area and will back charge the Contractor for all costs involved.
   3. Upon Substantial Completion, the Contractor shall completely clean the entire Project. The cleaning shall include, but is not limited to, cleaning of all surfaces, finishes, equipment, fixtures, sidewalks, driveway, parking lots, etc. The building and grounds and surrounding areas shall be left in a condition acceptable to the Owner.

F. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
   1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

G. Existing Stair Usage: Use of Owner's existing stairs will be permitted, as long as stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
   1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If, despite such protection, stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Contractor shall provide facilities, establish procedures, and conduct construction activities in a manner which will ensure compliance with Owner's environmental impact statement and other regulations controlling construction activities at Project site. Contractor shall designate one person, the Construction Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water/soil, generation of noise, and similar harmful or deleterious effects which might violate regulations or reasonably irritate persons at or in vicinity of Project site and will be responsible to maintain acceptable environmental conditions at all times during the construction period.
   2. Contractor shall provide filtering systems, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Maintain a minimum of 0.1 inches of water, negative pressure from point of enclosure. General Contractor shall provide exhaust from a location as remote as possible from unaltered areas. The point of exhaust shall be a minimum of 25 feet from any air intake or building opening in compliance with regulations as established by the environmental protection agency and applicable governmental and local requirements.
   3. Contractor shall apply and pay for all necessary environmental permits as required.

B. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

C. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

D. Covered Walkway: Contractor shall erect structurally adequate, protective, covered walkway for passage of individuals along adjacent public street(s), sidewalks. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and any requirements indicated on Drawings. Provide protective measures as required to provide free and safe passage of occupants and general public to and from occupied portions of the building. Maintain exits in a manner that is acceptable to the Local Building Official.
   1. Construct covered walkways using scaffold or shoring framing.
   2. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
   3. Extend back wall beyond the structure to complete enclosure fence.
   4. Paint and maintain in a manner approved by Owner and Architect.

E. Temporary Enclosures: Contractor shall provide temporary enclosures for protection of all new and existing construction, interior and exterior effected by scope of work, in progress and completed, from exposure, foul weather and unsatisfactory ambient conditions, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior at all times during construction. Damage

and/or leaks effecting existing materials and/or equipment within an existing building resulting from inadequate temporary enclosure materials and methods are the responsibility of the Contractor to remedy and replace to the satisfaction of the Architect.

1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
2. Use fire-retardant treated lumber and plywood. Provide tarpaulins and UL label and flame spread of 15 or less; provide translucent type (nylon reinforced polyethylene) where daylighting of enclosed space would be beneficial for workmanship, and reduce use of temporary lighting.

F. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
   1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.
   2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
      a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.
   3. Insulate partitions to provide noise protection to occupied areas.
   4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
   5. Protect air-handling equipment.
   6. Construct temporary dustproof closures to open ends of ductwork and equipment until such time as systems are ready for use or till substantial completion.
   7. Weather strip openings.
   8. Provide walk-off mats at each entrance through temporary partition.

G. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
   1. Prohibit smoking in hazardous fire-exposure and construction areas.
   2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
   4. Fire Extinguishers: Provide portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

3.05 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of the Contractor. Owner reserves right to take possession of Project identification signs.
   2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Closeout Procedures.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and equivalent products.

B. Related Requirements:
   1. Section 011000 - Summary for Contractor requirements related to Owner-furnished products.
   2. Section 012100 - Allowances for products selected under an allowance.
   3. Section 012500 - Substitution Procedures for requests for substitutions.
   4. Section 014200 - References for applicable industry standards for products specified.
   5. Section 017700 - Closeout Procedures for submitting warranties.

1.03 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
   3. Equivalent Product: Product by named manufacturer that is demonstrated and approved through the equivalent product submittal process described in Part 2 "Equivalent Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," or ‘approved equal” including make or model number or other designation. Published

attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Equivalent Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating equivalent products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating equivalent products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a equivalent product request or substitution request, if applicable.

D. Equivalent Product Request Submittal: An action submittal requesting consideration of a equivalent product, including the following information:
   1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
   2. Data indicating compliance with the requirements specified in Part 2 "Equivalent Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 - Submittal Procedures.

F. Substitution: Refer to Section 012500 - Substitution Procedures for definition and limitations on substitutions.

1.04 QUALITY ASSURANCE

A. Equivalency of Options: If Contractor is given option of selecting between two or more products for use on Project, select product equivalent with products previously selected, even if previously selected products were also options.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
   1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
   2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
      a. Name of product and manufacturer.
      b. Model and serial number.
      c. Capacity.

d. Speed.
e. Ratings.

1.05 COORDINATION

A. Modify or adjust affected work as necessary to integrate work of approved equivalent products and approved substitutions.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
   1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:
   1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
   2. Store products to allow for inspection and measurement of quantity or counting of units.
   3. Store materials in a manner that will not endanger Project structure.
   4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
   5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
   6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   7. Protect stored products from damage and liquids from freezing.

1.07 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.

2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
   3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
   4. Where products are accompanied by the term "as selected," Architect will make selection.
   5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
   6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Equivalent Products" Article to obtain approval for use of an unnamed product.
      a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:
   1. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
      a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
      b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

2. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
    a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
    b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
3. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a equivalent product. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Equivalent Products" Article for consideration of an unnamed product by one of the other named manufacturers.
    a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 - Substitution Procedures for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
    1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 - Substitution Procedures for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
    1. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    2. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.02 EQUIVALENT PRODUCTS

A. Conditions for Consideration of Equivalent Products: Architect will consider Contractor's request for equivalent product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
    1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Equivalent Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 - Submittal Procedures.
   1. Form of Approval of Submittal: As specified in Section 013300 - Submittal Procedures.
   2. Use product specified if Architect does not issue a decision on use of a equivalent product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of equivalent product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 EXECUTION (NOT USED)

END OF SECTION 016000

SECTION 017300 - EXECUTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
   1. Construction layout.
   2. Installation of the Work.
   3. Cutting and patching.
   4. Progress cleaning.
   5. Starting and adjusting.
   6. Protection of installed construction.

B. Related Requirements:
   1. Section 011000 - Summary for coordination of Owner-furnished products, Owner-performed work, Owner's separate contracts, and limits on use of Project site.
   2. Section 013300 - Submittal Procedures for submitting surveys.
   3. Section Professional Surveyor 017700 - Closeout Procedures for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
   4. Section 024119 - Selective Demolition for demolition and removal of selected portions of the building.
   5. Section 078400 - Firestopping for patching penetrations in fire-rated construction.

1.03 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 PREINSTALLATION MEETINGS

A. Cutting and Patching Conference: Conduct conference at Project site.
   1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect and Construction Manager of

scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
   a. Contractor's superintendent.
   b. Trade supervisor responsible for cutting operations.
   c. Trade supervisor(s) responsible for patching of each type of substrate.
   d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

B. Layout Conference: Conduct conference at Project Site.
1. Prior to establishing layout of new and existing perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect and Construction Manager of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:
   a. Contractor's superintendent.
   b. Professional surveyor responsible for performing Project surveying and layout.
2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
3. Review requirements for including layouts on Shop Drawings and other submittals.
4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For land surveyor or professional engineer licensed in the state the Project is located.

B. Certified Surveys: Submit two copies signed by land surveyor or professional engineer licensed in the state the Project is located.

C. Certificates: Submit certificate signed by land surveyor or professional engineer licensed in the state the Project is located, certifying that location and elevation of improvements comply with requirements.

D. Cutting and Patching Plan: Submit plan describing procedures at least (10) ten days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems

that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

E. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

1.06 QUALITY ASSURANCE

A. Professional Engineer Qualifications: Refer to Section 014000 - Quality Requirements.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.

1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include, but are not limited to the following:
   a. Primary operational systems and equipment.
   b. Fire separation assemblies.
   c. Air or smoke barriers.
   d. Fire-suppression systems.
   e. Plumbing piping systems.
   f. Mechanical systems piping and ducts.
   g. Control systems.
   h. Communication systems.
   i. Fire-detection and -alarm systems.
   j. Conveying systems.
   k. Electrical wiring systems.
   l. Operating systems of special construction.
3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
   a. Water, moisture, or vapor barriers.
   b. Membranes and flashings.
   c. Exterior curtain-wall construction.
   d. Sprayed fire-resistive material.
   e. Equipment supports.
   f. Piping, ductwork, vessels, and equipment.

g. Noise- and vibration-control elements and systems.

4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
5. Provide comprehensive GPRS ground penetrating radar scanning and detection services prior to drilling and cutting to locate electrical and plumbing utilities below the concrete slabs before cutting or coring.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

D. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void or compromise existing warranties.

PART 2 PRODUCTS

2.01 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
   1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
   2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

3. For structural demolition operations, engage a licensed Professional Engineer in the state having jurisdiction to survey the condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of structure or adjacent structures during any demolition and construction operations. Notify the Architect in writing of conflicts with the safe planned demolition and construction work for direction prior to proceeding with the work.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
   3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
   2. List of detrimental conditions, including substrates.
   3. List of unacceptable installation tolerances.
   4. Recommended corrections.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
   1. Where existing services and/or systems are required to be removed, relocated, or abandoned, whether shown on drawings or not, bypass such services and/or systems before cutting to prevent interruption to the fullest extent possible to occupied areas.
   2. Prior to cutting and patching work, survey and locate utilities, structural elements and hazards using location/detection equipment. Submit a written report to the Architect describing the nature and extent of any conflicts with the intended function or design of the work. Do not proceed until conflicts are resolved.

E. Remove debris and abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring from concealed and exposed spaces. Prepare surfaces and remove surface finishes to provide for proper installation of new work and new finishes.

F. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

G. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

H. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 - Project Management and Coordination.

3.03 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect and Construction Manager promptly.

B. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.04 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb, and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
   4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.
   1. Comply with Section 017700 - Closeout Procedures for repairing or removing and replacing defective Work.

3.05 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 015000 - Temporary Facilities and Controls in locations indicated on drawings.
   2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.
   3. Relocate items indicated on drawings.
   4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunication): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
      a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
      b. See Section 011000 - Summary for other limitations on outages and required notifications.
      c. Provide temporary connections as required to maintain existing systems in service.
   4. Verify that abandoned services serve only abandoned facilities.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
   1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.

2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
4. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

J. Clean existing systems and equipment.

K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

L. Do not begin new construction in alterations areas before demolition is complete.

M. Comply with all other applicable requirements of this section.

3.06 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 - Summary.

E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required,

and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
      a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
      b. Restore damaged pipe covering to its original condition.
   3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
   4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
   5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

G. Cleaning: Clean areas and spaces where cutting and patching are performed, immediately after work is performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.07 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
   a. Use containers intended for holding waste materials of type to be stored.
4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 - Temporary Facilities and Controls and/or Section 017419 - Construction Waste Management and Disposal.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.08 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 014000 - Quality Requirements.

3.09 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

D. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Recycling nonhazardous demolition and construction waste.
   2. Disposing of nonhazardous demolition and construction waste.

1.03 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste become property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
   1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For waste management coordinator and/or refrigerant recovery technician.

B. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.06 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.

B. Refrigerant Recovery Technician Qualifications: An entity certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

PART 2 PRODUCTS

2.01 RECYCLING RECEIVERS AND PROCESSORS

A. Provide information on local, available recycling receivers and processors:

PART 3 EXECUTION

3.01 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall acrue to Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
    a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.02 RECYCLING DEMOLITION WASTE

A. Asphalt Paving: Grind asphalt to maximum 1-1/2-inch size.

B. Asphalt Paving: Break up and transport paving to asphalt-recycling facility.

C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
   1. Pulverize concrete to maximum 1-1/2-inch size.

D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
   1. Pulverize masonry to maximum 1-inch size.
   2. Clean and stack undamaged, whole masonry units on wood pallets.

E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

F. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.
   2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

H. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

J. Metal Suspension System: Separate metal members, including trim and other metals from acoustical panels and tile, and sort with other metals.

K. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
   1. Store clean, dry carpet and pad in a closed container or trailer provided by carpet reclamation agency or carpet recycler.

L. Carpet Tile: Remove debris, trash, and adhesive.
   1. Stack tile on pallet and store clean, dry carpet in a closed container or trailer provided by carpet reclamation agency or carpet recycler.

M. Piping: Reduce piping to straight lengths and store by material and size. Separate supports, hangers, valves, sprinklers, and other components by material and size.

N. Conduit: Reduce conduit to straight lengths and store by material and size.

O. Lamps: Separate lamps by type and store according to requirements in 40 CFR 273.

3.03 RECYCLING CONSTRUCTION WASTE

A. Packaging:
   1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
   2. Polystyrene Packaging: Separate and bag materials.
   3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
   4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:
   1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
   2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.
   1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

D. Paint: Seal containers and store by type.

3.04 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.

B. Related Requirements:
   1. Section 012900 - Payment Procedures for requirements for Applications for Payment for Substantial Completion and Final Completion.
   2. Section 013233 - Photographic Documentation for submitting Final Completion construction photographic documentation.
   3. Section 015000 - Temporary Facilities and Controls
   4. Section 017300 - Execution
   5. Section 017419 - Construction Waste Management and Disposal
   6. Section 017823 - Operation and Maintenance Data for additional operation and maintenance manual requirements.
   7. Section 017839 - Project Record Documents for submitting Record Drawings, Record Specifications, and Record Product Data.
   8. Section 017900 - Demonstration and Training for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.03 DEFINITIONS

A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.05 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.06 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.07 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of (10) ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect's or Construction Manager's. Label with manufacturer's name and model number.
      a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Architect's or Construction Manager's signature for receipt of submittals.
   5. Submit testing, adjusting, and balancing records.
   6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of (10) ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
   1. Advise Owner of pending insurance changeover requirements.
   2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   3. Complete startup and testing of systems and equipment.

4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Advise Owner of changeover in utility services.
6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
8. Complete final cleaning requirements.
9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of (10) ten days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.08 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
   1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
   2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Submit Consent of Surety for Final Payment.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

C. Complete and submit to Architect “Ready for Closeout” form included as part of the Project Manual.

1.09 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
   2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect and Construction Manager.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in the following format:
      a. Web-Based Project Software Upload: Utilize software feature for creating and updating list of incomplete items (punch list).

1.10 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
   1. Submit on digital media acceptable to Architect, by email to Architect, or by uploading to web-based project software site.
   2. Original Warranties and Bond documents with raised seals shall be forwarded to the Architect for delivery to the Owner.

D. Warranties in Paper Form:
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
    a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
    i. Vacuum and mop concrete.
    j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
    k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
    l. Remove labels that are not permanent.

m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
    1) Clean HVAC system in compliance with NADCA ACR. Provide written report on completion of cleaning.
q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
r. Clean strainers.
s. Leave Project clean and ready for occupancy.

C. Pest Control: Comply with pest control requirements in Section 015000 - Temporary Facilities and Controls Prepare written report.

D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 - Temporary Facilities and Controls and/or Section 017419 - Construction Waste Management and Disposal.

3.02 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 - Execution before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory manuals.
   2. Emergency manuals.
   3. Systems and equipment operation manuals.
   4. Systems and equipment maintenance manuals.
   5. Product maintenance manuals.

B. Related Requirements:
   1. Section 013300 - Submittal Procedures for submitting copies of submittals for operation and maintenance manuals.

1.03 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.04 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
   2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:
   1. Submit on digital media acceptable to Architect, or by email to Architect, or by uploading to web-based project software site. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least (30) thirty days before commencing demonstration and training. Architect[and Commissioning Authority] will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least (15) fifteen days before commencing demonstration and training. Architect will return copy with comments.
   1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within (15) fifteen days of receipt of Architect's comments and prior to commencing demonstration and training.

E. Comply with Section 017700 - Closeout Procedures for schedule for submitting operation and maintenance documentation.

1.05 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
   1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
   2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
   3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
   4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.

5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.06 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
    1. Title page.
    2. Table of contents.
    3. Manual contents.

B. Title Page: Include the following information:
    1. Subject matter included in manual.
    2. Name and address of Project.
    3. Name and address of Owner.
    4. Date of submittal.
    5. Name and contact information for Contractor.
    6. Name and contact information for Construction Manager.
    7. Name and contact information for Architect.
    8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
    9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
    1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.07 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   3. Gas leak.
   4. Water leak.
   5. Power failure.
   6. Water outage.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.

1.08 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
   2. Performance and design criteria if Contractor has delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.

5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed and identify color coding where required for identification.

1.09 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source

information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
   1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
      a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
   1. Do not use original project record documents as part of maintenance manuals.

1.10 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Requirements:
   1. Section 017300 - Execution for final property survey.
   2. Section 017700 - Closeout Procedures for general closeout procedures.
   3. Section 017823 - Operation and Maintenance Data for operation and maintenance manual requirements.

1.03 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit copies of Record Drawings as follows:
      a. Initial Submittal:
         1) Submit PDF electronic files of scanned record prints and one set of file prints.
         2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
      b. Final Submittal:
         1) Submit PDF electronic files of scanned Record Prints and one set of file prints.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.

1.04 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Depths of foundations.
    d. Locations and depths of underground utilities.
    e. Revisions to routing of piping and conduits.
    f. Revisions to electrical circuitry.
    g. Actual equipment locations.
    h. Duct size and routing.
    i. Locations of concealed internal utilities.
    j. Changes made by Change Order or Construction Change Directive.
    k. Changes made following Architect's written orders.
    l. Details not on the original Contract Drawings.
    m. Field records for variable and concealed conditions.
    n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect and Construction Manager . When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect and Construction Manager for resolution.
4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
    a. See Section013100 - Project Management and Coordination for requirements related to use of Architect's digital data files.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
   1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Format: Annotated PDF electronic file with comment function enabled.
   3. Identification: As follows:
      a. Project name.
      b. Date.
      c. Designation "PROJECT RECORD DRAWINGS."
      d. Name of Architect and Construction Manager.
      e. Name of Contractor.

1.05 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
   4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
   5. Note related Change Orders and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic files.

1.06 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic files.
   1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.07 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic files.
   1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.08 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Construction Manager's reference during normal working hours.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.
   3. Demonstration and training video.

1.03 SUBMITTALS

A. Demonstration and Training Schedule: Contractor shall prepare and submit to the Architect a list of all systems and equipment that they will be providing training for. The Schedule shall be submitted prior to the issuance of the Certificate of Substantial Completion. The list shall be generated from the requirements outlined in the project manual, and shall include the following;
   1. Spec Section.
   2. Name of System or Equipment.
   3. Number of Hours of Training to be Provided.
   4. Miscellaneous Notes or Special Requirements.

B. Instruction Program: Submit (2) two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module, no less than 10 days prior to the anticipated date of the Demonstration and Training. Include learning objective and outline for each training module.
   1. At completion of training, submit (2) two complete training manual(s) for Owner's use.

C. Qualification Data: For Instructor.

D. Attendance Record: For each training module, submit list of participants and length of instruction time.

E. Demonstration and Training Video on DVD: Submit (2) two copies within (7) seven days of end of each training module.
   1. Identification: On each copy, provide an applied label with the following information:
      a. Name of Project.

b. Name of Architect and Construction Manager.
c. Name of Contractor.
d. Date videotape was recorded.
e. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

1.04 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, experienced in operation and maintenance procedures and training.
   1. Credentials shall be presented at the time of demonstration and a copy of the credentials and contact information included with the Demonstration DVD.

1.05 COORDINATION

A. The Demonstration and Training Schedule shall be submitted to the Architect and Owner no less than 14 calendar days prior to the first scheduled demonstration and training event.
B. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
C. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
D. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.
E. Timeline: The general time line and schedule regarding Demonstration and Training shall be as follows:
   1. Submit Operations and Maintenance Manuals to the Architect for Review
   2. Architect reviews and returns Operations and Maintenance Manuals to the Contractor
   3. Contractor submits Demonstration and Training Schedule to the Architect 14 days minimum prior to the commencement of training.
   4. Contractor submits Instruction Program(s) 10 days minimum prior to the commencement of training.
   5. Owner confirms availability for proposed training dates and times, and schedules a location for training to be held 3 days minimum prior to the commencement of training.

PART 2 PRODUCTS

2.01 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment, including, but not limited to, the following types of systems as provided:
   1. Fire-protection systems, including fire alarm.

2. Heat generation, including boilers, feedwater equipment, pumps, and steam distribution piping.
3. Refrigeration systems, including chillers, cooling towers, condensers, pumps, and distribution piping.
4. HVAC systems, including air-handling equipment, air distribution systems, and terminal equipment and devices.
5. HVAC instrumentation and controls.
6. Electrical service and distribution, including transformers, switchboards, panelboards, uninterruptible power supplies, and motor controls.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
   1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
      a. System, subsystem, and equipment descriptions.
      b. Performance and design criteria if Contractor is delegated design responsibility.
      c. Operating standards.
      d. Regulatory requirements.
      e. Equipment function.
      f. Operating characteristics.
      g. Limiting conditions.
      h. Performance curves.
   2. Documentation: Review the following items in detail:
      a. Emergency manuals.
      b. Operations manuals.
      c. Maintenance manuals.
      d. Project Record Documents.
      e. Identification systems.
      f. Warranties and bonds.
      g. Maintenance service agreements and similar continuing commitments.
   3. Emergencies: Include the following, as applicable:
      a. Instructions on meaning of warnings, trouble indications, and error messages.
      b. Instructions on stopping.
      c. Shutdown instructions for each type of emergency.
      d. Operating instructions for conditions outside of normal operating limits.
      e. Sequences for electric or electronic systems.
      f. Special operating instructions and procedures.
   4. Operations: Include the following, as applicable:
      a. Startup procedures.
      b. Equipment or system break-in procedures.
      c. Routine and normal operating instructions.
      d. Regulation and control procedures.
      e. Control sequences.
      f. Safety procedures.
      g. Instructions on stopping.
      h. Normal shutdown instructions.
      i. Operating procedures for emergencies.

j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.
7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.
   h. Instructions on methods and material agents known to be detrimental and to be avoided.
8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 EXECUTION

3.01 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.02 SCHEDULING

A. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through Construction Manager in accordance with requirements outlined in Section 1 above.

B. The Owner shall not be liable for any additional costs related to rescheduling of training, provided that they gave a minimum of 48 hours notice to the Contractor of the need to reschedule a Demonstration and Training Event.

3.03 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Owner will furnish Contractor with names and positions of participants, no less than 3 days prior to the training event.

3.04 DEMONSTRATION AND TRAINING VIDEO ON DVD

A. General: Engage a qualified photographer to record demonstration and training videos. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
   1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video Format: Provide high-quality DVD color.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

END OF SECTION 017900

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Provide all removal, proper and legal disposal work as required to complete selective demolition work and prepare existing areas for new work required including, but not limited to, the following:
   1. Demolition, removal and legal disposal off-site of selected portions of the building, construction assemblies, and other incidental work, whether shown or not shown, but required to complete the installation of scheduled work, coordinated with other trades and construction components being replaced by new construction.
   2. Disconnecting, capping or sealing, abandoning or removing utilities as indicated and/or required.
   3. Patching, repairing and replacing areas damaged or altered by demolition work, with new materials and construction similar in kind unless otherwise indicated.
   4. Demolition and removal of selected site elements.
   5. Salvage of existing items to be reused, relocated or recycled.

B. Related Requirements:
   1. Section 011000 - Summary for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
   2. Section 017300 - Execution for cutting and patching procedures.

1.03 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.04 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
   1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

C. Owner reserves first right of refusal for removal and salvage items. Items indicated for removal and salvage remain the Owner's property. Remove, clean, and pack items to protect against damage and deliver to Owner's designated storage area with labels to identify contents of containers. Demolished materials shall become the Contractor's property and removed from the site with further disposition at the Contractor's option.

1.05 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site.
   1. Inspect and discuss condition of construction to be selectively demolished.
   2. Review structural load limitations of existing structure.
   3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
   5. Review areas where existing construction is to remain and requires protection.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional Engineer and refrigerant recovery technician.

B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, dust control and for noise control. Indicate proposed locations and construction of barriers.

C. Schedule of Selective Demolition Activities: Indicate the following:
   1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
   2. Interruption of utility services. Indicate how long utility services will be interrupted.
   3. Coordination for shutoff, capping, and continuation of utility services.
   4. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
   5. Locations of proposed dust- and noise-control temporary partitions and means of egress.

D. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.

E. Pre-demolition Photographs or Video: Submit before Work begins.

F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.

1.07 CLOSEOUT SUBMITTALS

A. Inventory: Submit a list of items that have been removed and salvaged.

B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.08 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
   1. Coordinate with the Owner's continuing occupation and use of portions of the building to maintain safe emergency access to and from the facilities at all times.
   2. Provide minimum of three (3) working days advance notice to Owner of demolition activities that will impact Owner's normal operations.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. The Contractor shall photograph and catalog the structural condition of each adjacent area, paying particular attention to the condition of existing foundations, evidence of cracks, poor condition of masonry, or other poor site conditions that exist before demolition and construction begins. The purpose of this exercise is to obtain a record of adjacent site conditions before work begins, in order to evaluate potential future claims of property damage caused by vibrations, noise, seismic disturbances, or direct impact. NOTE: The Contractor is encouraged to video record the condition of the property in addition to obtaining a photographic record.

D. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

E. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

F. Partial Demolition and Removal: Items indicated to be removed, and not intended to be salvaged or retained by the Owner, but of salvageable value to Contractor, may be removed from the project as work progresses. Transport salvaged items from the project as they are removed.
   1. Storage or sale of removed items on site will not be permitted.

G. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

H. Should the Contractor fail to photographically document the condition of existing structures, then, it shall be held responsible for all claims of property damage. Notwithstanding, photographically documenting the condition of existing facilities does not relieve the contractor from any responsibility for repairing subsequent damage to the facility caused by or resulting from the Contractor's demolition or construction activities

1.09 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
   1. Roofing system

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. Inventory and record the condition of items to be removed and re-installed and items to be removed and salvaged.

E. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect and Owner's Representative in accurate detail. Pending receipt of directive from Architect and/or Owner's Representative, rearrange demolition schedule as necessary to continue overall job progress without delay.

F. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
   1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

G. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs, preconstruction videotapes and/or templates.
   1. Comply with requirements specified in Section013233 - Photographic Documentation.
   2. Inventory and record the condition of items to be removed and salvaged. Provide photographs and/or video of conditions that might be misconstrued as damage caused by salvage operations.
   3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Use utility and material locator equipment to locate utilities, structural elements etc. concealed within the building's construction.

B. Existing building fire protection system shall not be diminished. Removal of existing devices shall not occur until the new equipment is in place and ready for the switchover.

C. Existing Services/Systems to Remain: Locate and maintain services/systems indicated to remain and protect them against damage.
   1. Comply with requirements for existing services/systems interruptions specified in Section 011000 - Summary.

D. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building. Provide minimum of (3) working days advance notice to Owner if shutdown of service is necessary during change-over.
   3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated to be removed. Protect store and re install existing equipment effected by the new work that is not noted to be demolished.
      a. Piping to Be Removed: Remove piping indicated to be removed back to the main and cap or plug remaining piping with same or compatible piping material.
      b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
      c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
      d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
      e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

f. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remove remaining portion of pipe or conduit after bypassing.
g. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.
h. Contractor's scope of work includes, and the Contractor is required and expected to, patch any hole(s) resulting in the removal and/or capping of plumbing fixture(s) and/or piping in a wall, ceiling or floor to remain to match existing conditions, unless otherwise noted.

3.03 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Section 015000 - Temporary Facilities and Controls.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
   3. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas. Provide insulated temporary weather protection at heated spaces that are required to remain heated.
   4. Where temporary covered passageways are required or indicated, covers shall be constructed to sustain a minimum point loading of 500 lbs.
   5. Use utility and material locator equipment prior to cutting into existing construction to locate concealed utilities. By-pass or shut-off utilities anticipated to be near the demolition area.
   6. Construct temporary, insulated, solid, dustproof, partitions where required to separate areas where extensive dirt, dust, thermal and noisy operations are performed. Equip partitions with dustproof doors and security locks where passage is required. Use sound insulation to protect against noise and thermal insulation to protect against changes in temperature.
   7. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   8. Cover and protect furniture, furnishings, and equipment that have not been removed.
   9. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
   10. Maintain dust-proof partitions and closures as required preventing spread of dust or fumes to occupied portions of the building.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

D. Damages: Notify the Architect and Owner of any damages. Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

E. Traffic: Conduct demolition operations and debris removal in a manner to ensure minimum interference with pedestrian and vehicular access and exit routes as well as other adjacent occupied or used facilities.
   1. Do not close, block or otherwise obstruct streets, parking areas, walks or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

F. Explosives: Use of explosives will not be permitted.

G. Pollution Controls: Use temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in the air to lowest practical level. Maintain a minimum of 0.1 inches of water, negative pressure from point of enclosure. The area shall be exhausted from a location as remote as possible from unaltered areas. The point of exhaust shall be a minimum of 25 feet from any air intake or building opening in compliance with regulations as established by the environmental protection agency and applicable governmental and local requirements.

3.04 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Install lintels and or supports at all exterior and structural openings. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches.
   5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   6. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
   7. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   8. Dispose of demolished items and materials promptly.
   9. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

10. Where repairs to existing surfaces are required, patch to produce surfaces with the integrity and visual appearance of the original installation when it was new and suitable for new scheduled finish materials.
11. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.
12. Patch and repair all surfaces in the newly created openings, Install lintels and or supports at all openings. Where demolition work extends from one finished area into another. Provide a flush and even surface of uniform stability, color and appearance.
    a. Closely match integrity, texture and finish of existing adjacent surfaces as when they were newly installed.
    b. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
    c. Where patching smooth painted surfaces, extend final paint coat over entire unbroken surface containing the patch after the surface has received primer and first finish coat.
    d. Remove existing applied finishes over the entire unbroken surface area and replace with new materials, if necessary, to achieve uniform color and appearance.
    e. Inspect and test patched areas to demonstrate integrity of the installation, where feasible.

B. Removed and Salvaged Items:
    1. Clean salvaged items.
    2. Pack or crate items after cleaning. Identify contents of containers.
    3. Store items in a secure area until delivery to Owner.
    4. Transport items to Owner's storage area designated by Owner.
    5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
    1. Clean and repair items to functional condition adequate for intended reuse.
    2. Pack or crate items after cleaning and repairing. Identify contents of containers.
    3. Protect items from damage during transport and storage.
    4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.05 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

C. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. New work to match existing.
   1. Remove existing roof membrane, flashings, copings.
   2. Remove existing roofing system on the top of parapets and roof curbs down to substrate to facilitate installation of new work.
   3. Remove HVAC equipment without release of refrigerants.

3.06 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
   4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.07 REPAIRS

A. Use repair materials identical to existing materials to the fullest extent possible.

B. Where identical materials are unavailable or cannot be used for exposed surfaces, code or hazard issues, use code compliant materials that visually match and are compatible with existing adjacent surfaces, that are free of damage, defects, deterioration, as originally installed when new, to the fullest extent possible pending approval by the Architect.

C. Use materials whose installed performance equals or surpasses that of the existing materials as originally installed and complies with applicable codes.

3.08 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

B. Change filters on air handling equipment at completion of selective demolition operations.

END OF SECTION 024119

SECTION 035400 - CAST UNDERLAYMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid-applied self-leveling floor underlayment.
   1. Use gypsum-based type at _____.
   2. Use cementitious type at _____.

1.02 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.

B. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

C. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2021.

D. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

F. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

G. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.

H. ASTM E492 - Standard Test Method for Laboratory Measurement of Impact Sound Transmission through Floor-Ceiling Assemblies Using the Tapping Machine; 2022.

I. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.

C. Shop Drawings: Include plans indicating substrates, locations, and average depths of underlayment based on survey of substrate conditions.

D. Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Instructions.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.

B. Product Compatibility: Manufacturers of underlayment and floor-covering systems certify in writing that products are compatible.

C. Fire-Resistance Ratings: Where indicated, provide hydraulic-cement underlayment systems identical to those of assemblies tested for fire resistance per ASTM E119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

D. Sound Transmission Characteristics: Where indicated, provide hydraulic-cement underlayment systems identical to those of assemblies tested for STC and IIC ratings per ASTM E90 and ASTM E492 by a qualified testing agency.

E. Pre-installation Conference: Conduct conference at Project site.
   1. Provide minutes of pre-installation conference.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

1.06 FIELD CONDITIONS

A. Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.

B. Do not install underlayment until floor penetrations and peripheral work are complete.

C. Maintain minimum ambient temperatures of between 50 degrees F and 80 degrees F 24 hours before, during and 72 hours after installation of underlayment.

D. During the curing process, ventilate spaces to remove excess moisture.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gypsum Underlayment:
   1. ARDEX Engineered Cements; ARDEX K 22 F with ARDEX P51 Primer: www.ardexamericas.com/#sle.
   2. Maxxon Corporation; Commercial EZ Crete: www.maxxon.com/#sle.
   3. USG; Levelrock Series 2500 Floor Underlayment: www.usg.com/#sle.
   4. Or Approved Equal
   5. Substitutions: See Section 016000 - Product Requirements.

B. Cementitious Underlayment:
   1. ARDEX Engineered Cements; K-15 Self-Leveling Underlayment Concrete: www.ardexamericas.com/#sle.
   2. Custom Building Products; CL-150 Self-Leveling Underlayment: www.custombuildingproducts.com/#sle.
   3. H.B. Fuller Construction Products, Inc; TEC Level Set 200 Self-Leveling Underlayment with TEC Multipurpose Primer: www.tecspecialty.com/#sle.
   4. USG; Durock Quik-Top Self-Leveling Underlayment: www.usg.com/#sle.
   5. Or Approved Equal
   6. Substitutions: See Section 016000 - Product Requirements.

C. Sound Control Mat:
   1. Maxxon Corporation; Maxxon Acousti-Mat 1/4: www.maxxon.com/#sle.
   2. USG; Levelrock SAM-N25 Supreme Sound Attenuation Mat: www.usg.com/#sle.
   3. Or APproved Equal
   4. Substitutions: See Section 016000 - Product Requirements.

2.02 MATERIALS

A. Gypsum-Based Underlayment: Gypsum based mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
   1. Compressive Strength: Minimum 2500 pounds per square inch, tested per ASTM C472.
   2. Density: Maximum 120 pounds per cubic foot.
   3. Final Set Time: 1 to 2 hours, maximum.
   4. Thickness: 1/8 inch feathered edge to maximum 3-1/2 inch.
   5. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.

B. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
   1. Compressive Strength: Minimum 4000 pounds per square inch after 28 days, tested per ASTM C109/C109M.
   2. Flexural Strength: Minimum 1000 psi after 28 days, tested per ASTM C348.
   3. Density: 125 pounds per cubic foot, nominal.
   4. Final Set Time: 1-1/2 to 2 hours, maximum.
   5. Thickness: Capable of thicknesses from minimum uniform thickness of 1/4 inch capable of feathered edge to match adjacent floor elevation, to maximum 3-1/2 inch.
   6. Surface Burning Characteristics: Flame spread/Smoke developed index of 0/0 in accordance with ASTM E84.
   7. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.

D. Primer: Manufacturer's recommended type.

E. Joint and Crack Filler: Latex-based filler, as recommended by manufacturer.

2.03 MIXING

A. Site mix materials in accordance with manufacturer's instructions.

B. Mix to self-leveling consistency without over-watering.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate. Proceed with application only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Prepare and clean substrate according to manufacturer's written instructions.

B. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through underlayment.

C. Concrete: : Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair underlayment bond.
   1. Moisture Testing: Perform anhydrous calcium chloride test, ASTM F1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 3 lb. of water/1000 sq. ft. in 24 hours, or as required to meet the manufacturer’s recommendations of floor finishes to be applied.

D. Wood: Mechanically fasten loose boards and panels to eliminate substrate movement and squeaks. Sand to remove coatings that might impair underlayment bond and remove sanding dust.
   1. Install metal lath for reinforcement of underlayment.

E. Metal Substrates: Mechanically remove, according to manufacturer's written instructions, rust, foreign matter, and other contaminants that might impair underlayment bond. Apply corrosion-resistant coating compatible with underlayment if recommended in writing by underlayment manufacturer.

F. Nonporous Substrates: For ceramic tile, quarry tile, and terrazzo substrates, remove waxes, sealants, and other contaminants that might impair underlayment bond, and prepare surfaces according to manufacturer's written instructions.

G. Remove substrate surface irregularities. Fill voids and deck joints with filler to prevent underlayment from leaking. Finish smooth.

H. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

I. Sound Control: Install sound control materials according to manufacturer's written instructions.

1. Do not install mechanical fasteners that penetrate through the sound control materials.

J. Vacuum clean surfaces.

K. Prime substrate in accordance with manufacturer's instructions. Allow to dry.

L. Close floor openings.

3.03 APPLICATION

A. Install underlayment in accordance with manufacturer's instructions.
   1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
   2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
   3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through underlayment.

B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.

C. Pump or pour material onto substrate. Do not retemper or add water.
   1. Pump, move, and screed while the material is still highly flowable.
   2. Be careful not to create cold joints.
   3. Wear spiked shoes while working in the wet material to avoid leaving marks.

D. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.
   1. Apply a final layer without aggregate to product surface.
   2. Feather edges to match adjacent floor elevations.

E. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

F. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.

G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.04 CURING

A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.

B. Air cure in accordance with manufacturer's instructions.

3.05 PROTECTION

A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.

B. Do not permit traffic over unprotected floor underlayment surfaces.

END OF SECTION 035400

SECTION 042000 - UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.
B. Concrete building brick.
C. Mortar and grout.
D. Reinforcement and anchorage.
E. Flashings.
F. Lintels.
G. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Nailing strips built into masonry.
B. Section 076200 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
C. Section 079200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2024.
C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.
D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.
E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2024.
F. ASTM C55 - Standard Specification for Concrete Building Brick; 2023.
G. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.
H. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units; 2023.
I. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units; 2024a.
J. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.

K. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.
L. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2024.
M. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025.
N. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.
O. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
P. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2025.
Q. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
R. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).
S. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

A. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
B. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.
C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
    1. See Section 016000 - Product Requirements, for additional provisions.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
B. Fire Rated Assemblies: Comply with applicable code for requirements for fire rated masonry construction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:
    1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.

2. Special Shapes: Provide nonstandard blocks configured for corners.
   a. Provide bullnose units for outside corners at interior locations.
3. Load-Bearing Units: ASTM C90,.
   a. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
   b. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
   c. Density Classification: as noted below by type:
      1) Foundation Units (below grade): Normal weight, load bearing units, (125 lbs/cu ft, or greater, oven dry weight of concrete) with at least 75% cross sectional area at bedding surfaces (bed faces).
      2) Above grade units (not exposed to exterior): Medium weight, load bearing units, (105 to 125 lbs/cu ft, oven dry weight of concrete, expanded 100% shale, clay or slate aggregate), nominal 4" units at fire-rated walls shall be minimum 75% solid cross sectional area at bedding surfaces (bed faces). Smooth face surface with minimal voids ready to accept painting system.
      3) Above grade units (exposed to exterior): Normal weight, load bearing, Architectural Faced Units, (125 lbs/cu ft, or greater, oven dry weight of concrete), with integral water repellent.
   d. Exposed Faces: Manufacturer's standard color and texture where indicated.
4. Nonloadbearing Units: ASTM C129.
   a. Hollow block.
   b. Medium weight.

B. Concrete Brick:
   1. Size: As indicated on drawings.
   2. Concrete Building Brick: ASTM C55; lightweight, solid, for interior or concealed use.

2.02 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
   1. Not more than 0.10 percent alkali.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.

D. Grout Aggregate: ASTM C404.

E. Water: Clean and potable.

F. Accelerating Admixture: Nonchloride type for use in cold weather. Complying with ASTM C270.
   1. Manufacturers:
      a. Euclid Chemical Company (The); Accelguard 80.
      b. Grace Construction Products; W. R. Grace & Co.; Morset.
      c. Sonneborn Products, BASF; Trimix-NCA.
      d. Or Approved Equal.
      e. Substitutions: See Section 016000 - Product Requirements.

G. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.
   1. Manufacturers:
      a. ACM Chemistries; RainBloc for Mortar.
      b. Addiment Incorporated; Block Plus W-10.
      c. Grace Construction Products, W. R. Grace & Co.; Dry-Block Mortar Admixture.
      d. Or Approved Equal.
      e. Substitutions: See Section 016000 - Product Requirements.

H. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Use only in combination with masonry units manufactured with integral water repellent admixture.
   2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
   3. Meet or exceed performance specified for water repellent admixture used in masonry units.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:
   1. Blok-Lok Limited
   2. FERO Corporation
   3. Hohmann & Barnard, Inc
   4. TruFast Walls, a division of Altenloh, Brinck & Co. US, Inc
   5. WIRE-BOND
   6. Or Approved Equal
   7. Substitutions: See Section 016000 - Product Requirements.

B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; galvanized.

C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

D. Single Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Truss or ladder.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
   3. Size: 0.1875 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

E. Strap Anchors: Bent steel shapes, 1-1/2 inch width, 0.105 inch thick, 24 inch length, with 1-1/2 inch long, 90 degree bend at each end to form a U or Z shape or with cross pins, hot dip galvanized to ASTM A153/A153M Class B.

F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.
   1. Concrete frame: Dovetail anchors of bent steel strap, nominal 1 inch width x 0.024 in thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.

2. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.

G. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.
   1. Manufacturers:
      a. ITW Commercial Construction North America; Teks Select Series: www.ITWBuildex.com/#sle.
      b. Or Approved Equal.
      c. Substitutions: See Section 016000 - Product Requirements.

H. Partition Top Anchors: 0.105-inch thick metal plate with a 3/8-inch diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
   1. Hohmann & Barnard, Inc.; #PTA-420, or approved equal.

I. Rigid Anchors: Fabricate from hot-dipped galvanized steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
   1. Hohmann & Barnard, Inc.; #344 – Rigid Partition Anchor, or approved equal.

J. Anchor bolts: Galvanized steel, ½” diameter x 16” long with 3” leg or as indicated on drawings.

2.04 FLASHINGS

A. Metal Flashing Materials: Stainless Steel, as specified in Section 076200.

2.05 ACCESSORIES

A. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; in maximum lengths available.

B. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 061000.

C. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 LINTELS

A. Precast or formed-in-place concrete lintels complying with requirements in Section 033000 - Cast-in-Place Concrete and with reinforcing bars indicated. Score lintels to include vertical joints to simulate mortar joints to blend in with masonry bond pattern. Score joint to allow for mortar pointing.

B. Steel Lintels: see section 055000

2.07 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior, loadbearing masonry: Type N.

3. Exterior, non-loadbearing masonry: Type N.
4. Interior, loadbearing masonry: Type N.
5. Interior, non-loadbearing masonry: Type O.

B. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

C. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running, unleess otherwise noted.
      a. For masonry units at existing masonry wall locations, match bond pattern of existing walls.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

F. Interlock intersections and external corners, except for units laid in stack bond.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

J. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

K. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL AND SINGLE WYTHE MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.

E. Lap joint reinforcement ends minimum 6 inches.

F. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

G. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.07 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Terminate flashing up 8 inches minimum on vertical surface of backing:
   1. Install vertical leg of flashing behind water-resistive barrier sheet over backing.
   2. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer's directions.
   3. Terminate vertical leg of flashing into bed joint in masonry or reglet in concrete.
   4. Anchor vertical leg of flashing into backing with a termination bar and sealant.
   5. Apply cap bead of sealant on top edge of self-adhered flashing.

C. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.

D. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.

3.08 LINTELS

A. Install loose steel lintels over openings.

B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled.
   1. Openings to 42 inches: Place two, No. 3 reinforcing bars 1 inch from bottom web.
   2. Do not splice reinforcing bars.
   3. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
   4. Place and consolidate grout fill without displacing reinforcing.
   5. Allow masonry lintels to attain specified strength before removing temporary supports.

C. Maintain minimum 8 inch bearing on each side of opening.

3.09 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.10 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

D. Form expansion joint as detailed on drawings.

3.11 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.12 TOLERANCES

A. Install masonry within the site tolerances found in TMS 402/602.

B. Maximum Variation from Alignment of Columns: 1/4 inch.

C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

G. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.13 CUTTING AND FITTING

A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.14 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 014000 - Quality Requirements.

B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.

C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.15 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Use non-metallic tools in cleaning operations.

3.16 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION 042000

SECTION 061000 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.
B. Rough opening framing for doors, windows, and roof openings.
C. Roofing nailers.
D. Preservative treated wood materials.
E. Fire retardant treated wood materials.
F. Miscellaneous framing and sheathing.
G. Concealed wood blocking, nailers, and supports.
H. Miscellaneous wood nailers, furring, and grounds.

1.02 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
B. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2024).
C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
D. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.
E. PS 20 - American Softwood Lumber Standard; 2025.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide technical data on wood preservative materials and application instructions.

1.04 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.05 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
   3. Anchors: Toggle bolt type for anchorage to hollow masonry.

2.04 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:

1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
    a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    b. Do not use treated wood in direct contact with the ground.
2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
    a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    b. Treat rough carpentry items as indicated .
    c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
    a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at each roof opening except where prefabricated curbs are specified and where specifically indicated otherwise; form corners by alternating lapping side members.

3.05 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements for additional requirements.

3.06 CLEANING

A. Waste Disposal: See Section 017419 - Construction Waste Management and Disposal.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION 061000

SECTION 062000 - FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Support framing, grounds, and concealed blocking.

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. AWI (QCP) - Quality Certification Program; Current Edition.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

E. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

F. BHMA A156.9 - Cabinet Hardware; 2020.

G. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

H. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, installation of associated and adjacent components, and finish hardware.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide manufacturer's environmental product declarations for all field applied finishes.

C. Manufacturer's Instructions: Provide manufacturer's installation instructions for factory-fabricated units.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:
   1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
   2. Provide labels or certificates indicating that work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   3. Provide designated labels on shop drawings as required by certification program.
   4. Provide designated labels on installed products as required by certification program.
   5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated units to project site in original packages, containers or bundles bearing brand name and identification.

B. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Factory-Fabricated Cellular PVC Column Covers:

2.02 SUSTAINABILITY CHARACTERISTICS

A. Provide sustainably harvested wood, certified or labeled; see Section 016000.

B. Provide wood harvested within specified radius of project site; see Section 016000.

C. Provide composite wood products complying with composite wood indoor emission requirements in Section 016116.

2.03 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate: NEMA LD 3; color as selected by Architect; textured, low gloss finish.

B. Laminate Adhesive: Type recommended by laminate manufacturer to suit application; not containing formaldehyde or other volatile organic compounds.

2.04 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Adhesive for factory-fabricated units: Manufacturer's recommended adhesive for application.

C. Fasteners for Exterior Applications: Stainless steel; length required to penetrate wood substrate 1-1/2 inch minimum.

D. Concealed Joint Fasteners: Threaded steel.

2.05 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Plastic Edge Trim: Extruded convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness;.

C. Cellular PVC Trim and Moldings: Extruded, expanded PVC; UV-resistant, heat-stabilized, and rigid material; for exterior use only.

D. Aluminum Edge Trim: Extruded convex shape; smooth surface finish; self locking serrated tongue; of width to match component thickness; natural mill finish.

2.06 HARDWARE

A. Hardware: Comply with BHMA A156.9.

B. Countertop Support Brackets: Fixed, L-shaped, corner reinforced, face-of-stud mounting.
   1. Material: Steel.
      a. Color: Black.
      b. Height: 5 inches.
      c. Support Length: 8 inches.
   2. Products:
      a. A&M Hardware, Inc; Standard Brackets: www.aandmhardware.com/#sle.
      b. Or approved equal..

2.07 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Cap exposed plastic laminate finish edges with plastic trim.

C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

END OF SECTION 062000

SECTION 072100 - THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Batt insulation and vapor retarder in exterior ceiling and roof construction.
B. Batt insulation for filling crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS

A. Section 061000 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.
B. Section 061600 - Sheahthing
C. Section 073113 - Asphalt Shingles

1.03 REFERENCE STANDARDS

A. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.
B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
C. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024c.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
C. Manufacturer's Installation Instructions: Include information on installation techniques.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Batt Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Facing: Aluminum foil, flame spread 25 rated; one side.
   5. Products:
      a. CertainTeed Corporation; CertaPro
      b. Johns Manville; FSK-25
      c. Owens Corning Corporation; EcoTouch PINK FIBERGLAS Insulation
      d. Or approved equal.
      e. Substitutions: See Section 016000 - Product Requirements.

2.02 ACCESSORIES

A. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application: Sealing of interior circular penetrations, such as pipes or cables.
   2. Width: 6 inches.
   3. Temperature Resistance: Range of minus 40 to 212 degrees F.

B. Insulation Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.

C. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.

F. Staple or nail facing flanges in place at maximum 6 inches on center.

G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

H. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over face of member.

I. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over face of member

J. Tape seal tears or cuts in vapor retarder.

K. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

3.03 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements for additional requirements.

B. Do not cover work until it has been inspected by roofing manufacturer's representative.

3.04 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION 072100

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, sheet metal roofing, and exterior penetrations.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2020.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

D. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

E. ASTM B32 - Standard Specification for Solder Metal; 2020.

F. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.

G. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products; 2025.

H. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

I. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.

J. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).

K. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

L. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. See Section 017419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim:
   1. ALUCOBOND by 3A Composites USA; ALUCOBOND AXCENT: www.alucobondusa.com/#sle.
   2. Petersen Aluminum Corporation: www.pac-clad.com/#sle.
   3. Tamlyn: www.tamlyn.com/#sle.
   4. Or Approved Equal
   5. Substitutions: See Section 016000 - Product Requirements.

B. Exterior Penetration Flashing Panel:
   1. Quickflash Weatherproofing Products, Inc: www.quickflashproducts.com/#sle.
   2. Or Approved Equal.
   3. Substitutions: See Section 016000 - Product Requirements.

2.02 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 18-gauge, 0.040-inch thick base metal.

B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum18-gauge, 0.040-inch thick base metal, shop pre-coated with PVDF coating.
   1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Architect from manufacturer's full colors.

C. Anodized Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper;18-gauge, 0.040-inch thick; clear anodized finish.
   1. Clear Anodized Finish: AAMA 611, AA-M12C22A41, Class I, clear anodic coating not less than 0.7 mil, 0.0007 inch thick.

D. Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 18-gauge, 0.040-inch thick; plain finish shop pre-coated with silicone modified polyester coating.

1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; pretreated metal with two-coat system including primer and color coat with at least 70 percent PVDF coating.
2. Color: As selected by Architect from manufacturer's full colors.

E. Stainless Steel: ASTM A666/A666M, Type 304 alloy, soft temper, 18-gauge, 0.040-inch thick; smooth No. 4 - Brushed finish.

F. Terne Coated Steel: 18-gauge, 0.040-inch thick copper bearing carbon steel core material with 0.092 lb/sq ft terne alloy coating on both sides of core metal.

G. Copper: ASTM B370, cold rolled 16 oz/sq ft, 24 gauge, 0.0216 inch thick; natural finish.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

G. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.04 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.05 ACCESSORIES

A. Fasteners: Stainless steel, with soft neoprene washers.

B. Underlayment: ASTM D226/D226M, organic roofing felt, Type I, No. 15.

C. Slip Sheet: Rosin-sized sheathing paper.

D. Primer Type: Zinc chromate.

E. Concealed Sealants: Non-curing butyl sealant.

F. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

G. Fenestration Perimeter Flashing Attachments: Two-piece flashing receiver and clip of extruded aluminum, at least 0.045 inch thick, for attaching flashing at perimeter of exterior wall fenestration openings.
   1. Provide flashing receiver profile appropriate for flashing applications.

H. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

I. Reglets: Surface-mounted type, galvanized steel; face and ends covered with plastic tape.

J. Solder: ASTM B32, Alloy Grade - Sn50 (50/50).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.

B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..

C. Apply plastic cement compound between metal flashings and felt flashings.

D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Exterior Flashing Receivers: Install in accordance with manufacturer's recommendations, and in proper relationship with adjacent construction, and as follows:
   1. Secure receiver at perimeter of wall opening with adhesives or fasteners.
   2. Place flashing into receiver channel.
   3. Secure flashing with receiver clip.

F. Seal metal joints watertight.

G. Secure gutters and downspouts in place with concealed fasteners.

H. Slope gutters 1/4 inch per 10 feet, minimum.

I. Connect downspouts to downspout boots, and grout connection watertight.

J. Set splash pads under downspouts, and set in place with _____.

3.04 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof curbs.
B. Equipment rails.
C. Roof penetrations mounting curbs.
D. Rooftop mounted guardrails.
E. Roof hatches.
F. Roof ventilation louvers.
G. Built-up roofing vents.
H. Non-penetrating pedestals.

1.02 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
C. ASTM B69 - Standard Specification for Rolled Zinc; 2021.
D. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.
C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04 DELIVERY, STORAGE, AND HANDLING

A. See Section 017419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store products under cover and elevated above grade.

1.05 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 ROOF CURBS

A. Roof Curbs Manufacturers:
   1. AES Industries Inc: www.aescurb.com/#sle.
   2. The Pate Company: www.patecurbs.com/#sle.
   3. LMCurbs; Roof Curbs: www.lmcurbs.com/#sle.
   4. MKT Metal Manufacturing: www.mktduct.com/#sle.
   5. Or approved Equal.
   6. Substitutions: See Section 016000 - Product Requirements.

B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
   1. Applications: Roof curbs used for roof penetrations/openings as indicated on drawings.
   2. Roof Curb Mounting Substrate: Curb substrate consists of flat roof deck sheathing with insulation.
   3. Sheet Metal Material:
      a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
         1) Finish: Mill finish.
   4. Roofing Cants: Provide integral sheet metal roofing cants dimensioned to begin slope at top of roofing system at 1:1 slope; minimum cant height 4 inches.
   5. Provide layouts and configurations indicated on drawings.

C. Curbs Adjacent to Roof Openings: Provide curb on each side of opening, with top of curb horizontal for equipment mounting.
   1. Provide preservative treated wood nailers along top of curb.
   2. Insulate inside curbs with 1-1/2 inch thick fiberglass insulation.
   3. Height Above Finished Roof Surface: 8 inches, minimum.

D. Equipment Rail Curbs: Straight curbs on each side of equipment, with top of curbs horizontal and level with each other for equipment mounting.

1. Provide preservative treated wood nailers along top of rails.
2. Height Above Finished Roof Surface: 12 inches, minimum.
3. Products:
   a. MKT Metal Manufacturing; Equipment Rails: www.mktduct.com/#sle.
   b. Or approved Equal.
   c. Substitutions: See Section 016000 - Product Requirements.

E. Equipment Support: Straight curbs on each side of equipment, with top of curbs parallel with metal roofing system and each other for equipment mounting.

F. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum 8 inches square unless otherwise indicated.

2.02 ROOF HATCHES AND VENTS

A. Smoke and Heat Vent Manufacturers:
   1. Babcock-Davis; AcousticMAX Acoustical Smoke Vent: www.babcockdavis.com/#sle.
   2. Nystrom, Inc; AcousticMAX Acoustical Smoke Vent: www.nystrom.com/#sle.
   3. Substitutions: See Section 016000 - Product Requirements.

B. Roof Ventilation Louvers: Roof mounted, with drainable louver blades in square profiles.
   1. Louver Profile: As indicated on drawings.
   2. Size: As indicated on drawings.
   3. Material:
      a. Galvanized Zinc: Comply with ASTM B69, architectural rolled zinc, Type 1.
   4. Products:
      a. CopperCraft; ____: www.coppercraft.com/#sle.
      b. Substitutions: See Section 016000 - Product Requirements.

C. Built-Up Roofing Vents: Formed aluminum ____ inch thick, with watertight construction to allow construction below roof membrane to breathe; with attachment flanges ____ inch wide.
   1. Finish: Mill finish.
   2. Products:
      a. Menzies Metal Products; Built Up Roof (BUR) Vent: www.menzies-metal.com/#sle.
      b. Substitutions: See Section 016000 - Product Requirements.

D. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
   1. Material: Stainless steel, Type 304, 14 gauge, 0.0747 inch thick.
   2. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on outside face of curb.
   3. Curb Height: 12 inches from finished surface of roof, minimum.

E. Metal Covers: Flush, insulated, hollow metal construction.
   1. Capable of supporting 40 psf live load.
   2. Material: Galvanized steel; outer cover 14 gauge, 0.0747 inch thick, liner 22 gauge, 0.03 inch thick.
   3. Finish: Factory prime paint.
   4. Insulation: Manufacturer's standard 1 inch rigid glass fiber.

5. Gasket: Neoprene, continuous around cover perimeter.

F. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
   1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
   2. Hinges: Heavy duty pintle type.
   3. Hold open arm with vinyl-coated handle for manual release.
   4. Latch: Upon closing, engage latch automatically and reset manual release.
   5. Manual Release: Pull handle on interior.
   6. Locking: Padlock hasp on interior.

2.03 NON-PENETRATING ROOFTOP SUPPORTS/ASSEMBLIES

A. Non-Penetrating Rooftop Support/Assemblies: Manufacturer-engineered and factory-fabricated, with pedestal bases that rest on top of roofing membrane, and not requiring any attachment to roof structure and not penetrating roofing assembly.
   1. Design Loadings and Configurations: As required by applicable codes.
   2. Height: Provide minimum clearance of 8 inches under supported items to top of roofing.
   3. Support Spacing and Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
   4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
   5. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.
   6. Products:
      a. Garlock Safety Systems: www.garlocksafety.com/#sle.
      b. Green Link, Inc: www.greenlinkengineering.com/#sle.
      c. PHP Systems/Design: www.phpsd.com/#sle.
      d. Or Approved Equal.
      e. Substitutions: See Section 016000 - Product Requirements.

B. Pipe Supports: Provide attachment fixtures complying with MSS SP-58 and as indicated.
   1. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.

C. Non-Penetrating Pedestals: Steel pedestals with square, round, or rectangular bases.
   1. Bases: High density polypropylene.
   2. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
   3. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

A. See Section 017000 - Execution and Closeout Requirements for additional requirements.
B. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 077200

SECTION 078400 - FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 PERFORMANCE REQUIREMENTS

A. General: For penetrations through the following types of fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
   1. Fire-resistance-rated walls including fire walls, fire partitions, fire barriers, and smoke barriers.
   2. Fire-resistance-rated horizontal assemblies including floors, floor/ceiling assemblies, and ceiling membranes of roof/ceiling assemblies.

B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E814 or UL 1478:
   1. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
      a. Penetrations located outside wall cavities.
      b. Penetrations located outside fire-resistance-rated shaft enclosures.

C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provides products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
   1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
   2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
   3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
   4. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.

1.03 RELATED REQUIREMENTS

A. Section 017000 - Execution and Closeout Requirements: Cutting and patching.

B. Section 092116 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

1.04 REFERENCE STANDARDS

A. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.

D. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

E. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2024.

F. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2020a.

G. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2020a.

H. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-Story Test Apparatus; 2025.

I. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a, with Editorial Revision (2024).

J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

K. ITS (DIR) - Directory of Listed Products; Current Edition.

L. FM 4991 - Approval Standard of Firestop Contractors; 2013.

M. FM (AG) - FM Approval Guide; Current Edition.

N. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

O. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

P. UL (DIR) - Online Certifications Directory; Current Edition.

Q. UL (FRD) - Fire Resistance Directory; Current Edition.

R. UL 1478 - Fire Pump Relief Valves; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Certificate from authority having jurisdiction indicating approval of materials used.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

1.06 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
   2. Verification of minimum three years documented experience installing work of this type.
   3. Verification of at least five satisfactorily completed projects of comparable size and type.
   4. Licensed by local authorities having jurisdiction (AHJ).

1.07 MOCK-UPS

A. See Section 014000 - Quality Requirements for additional requirements.

B. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.

C. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.

D. If accepted, mock-up will represent minimum standard for this work.

E. If accepted, mock-up may remain as part of this work. Remove and replace mock-ups not accepted.

1.08 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. Hilti, Inc: www.hilti.com/#sle.
   2. Nelson FireStop Products: www.nelsonfirestop.com/#sle.
   3. Specified Technologies Inc: www.stifirestop.com/#sle.
   4. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   5. Or Approved Equal.
   6. Substitutions: See Section 016000 - Product Requirements.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

D. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.
   2. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
   3. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
   4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.

B. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

C. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

E. Acoustically Rated Firestopping: Provide system tested in accordance with ASTM E90 with STC rating of 50, minimum.

2.04 FIRESTOPPING FOR PERIMETER CONTAINMENT

A. Perimeter Joint Systems That Have Not Been Tested For Movement Capabilities (Static-S):
1. 2 Hour Construction: UL System CW-S-0002; Specified Technologies Inc. AS200 Elastomeric Spray.
2. 2 Hour Construction: UL System CW-S-0002; Specified Technologies Inc. Fast Tack Firestop Spray.
3. 2 Hour Construction: UL System CW-S-0003; Specified Technologies Inc. Fast Tack Firestop Spray.
4. 2 Hour Construction: UL System CW-S-0007; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
5. 2 Hour Construction: UL System CW-S-2015; RectorSeal MetaCaulk 1200 Spray.
6. 2 Hour Construction: UL System CW-S-2017; RectorSeal MetaCaulk 1200 Spray.
7. Or Approved Equal.

B. Perimeter Joint Systems That Have Movement Capabilities (Dynamic-D):
1. 3 Hour Construction: UL System CW-D-2005; Specified Technologies Inc. Fast Tack Firestop Spray.
2. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. AS200 Elastomeric Spray.
3. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. Fast Tack Firestop Spray.
4. 2 Hour Construction: UL System CW-D-1011; Specified Technologies Inc. Fast Tack Firestop Spray.
5. 2 Hour Construction: Intertek System BP-120-03; RectorSeal MetaCaulk 1200 Spray.

6. 2 Hour Construction: Intertek System BP-120-05; RectorSeal MetaCaulk 1200 Spray.
7. 2 Hour Construction: Intertek System BP-120-09; RectorSeal MetaCaulk 1200 Spray.
8. 2 Hour Construction: Intertek System BP-120-12; RectorSeal MetaCaulk 1200 Spray.
9. 2 Hour Construction: Intertek System BP-120-14; RectorSeal MetaCaulk 1200 Spray.
10. 2 Hour Construction: UL System CW-D-2014; RectorSeal MetaCaulk 1200 Spray.
11. 2 Hour Construction: UL System CW-D-2016; RectorSeal MetaCaulk 1200 Spray.
12. 2 Hour Construction: UL System CW-D-2018; RectorSeal MetaCaulk 1200 Spray.
13. 2 Hour Construction: UL System CW-D-2042; Specified Technologies Inc. Fast Tack Firestop Spray.
14. 2 Hour Construction: UL System CW-D-2047; RectorSeal MetaCaulk 1200 Spray.
15. 2 Hour Construction: UL System CW-D-2049; RectorSeal MetaCaulk 1200 Spray.
16. Or Approved Equal.

2.05 FIRESTOPPING FOR FLOOR-TO-FLOOR, FLOOR-TO-WALL, HEAD-OF-WALL, AND WALL-TO-WALL JOINTS

A. Concrete and Concrete Masonry Walls and Floors:
   1. Floor-to-Floor Joints:
      a. 4 Hour Construction: UL System FF-D-0023; RectorSeal MetaCaulk 150+.
      b. 3 Hour Construction: UL System FF-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
      c. 3 Hour Construction: UL System FF-D-1008; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      d. 3 Hour Construction: UL System FF-D-1024; RectorSeal MetaCaulk 1200 Spray.
      e. 3 Hour Construction: UL System FF-D-1025; Specified Technologies Inc. AS200 Elastomeric Spray.
      f. 3 Hour Construction: UL System FF-D-1027; RectorSeal MetaCaulk 150+.
      g. 3 Hour Construction: UL System FF-D-1077; RectorSeal MetaCaulk 835+.
      h. 2 Hour Construction: UL System FF-D-0024; RectorSeal MetaCaulk 150+.
      i. 2 Hour Construction: UL System FF-D-0053; RectorSeal MetaCaulk Joint Strip.
      j. 2 Hour Construction: UL System FF-D-1013; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      k. 2 Hour Construction: UL System FF-D-1085; Tremco, TREMstop Acrylic Firestop Sealant.
      l. Or Approved Equal.
   2. Head-of-Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:

a. 3 Hour Construction: UL System HW-D-0139; Specified Technologies Inc. AS200 Elastomeric Spray.
b. 2 Hour Construction: UL System HW-D-0039; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
c. 2 Hour Construction: UL System HW-D-0058; RectorSeal MetaCaulk 1200 Spray.
d. 2 Hour Construction: UL System HW-D-0149; RectorSeal MetaCaulk 150+.
e. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
f. 2 Hour Construction: UL System HW-D-1037; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
g. Or Approved Equal.

3. Head-of-Wall Joints at Concrete/Concrete Masonry Wall to Concrete Floor:
   a. 3 Hour Construction: UL System HW-D-0041; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   b. 3 Hour Construction: UL System HW-D-0312; Specified Technologies Inc. SIL Silicone Sealant.
   c. 3 Hour Construction: UL System HW-D-1034; Specified Technologies Inc. AS200 Elastomeric Spray.
   d. 3 Hour Construction: UL System HW-D-1058; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   e. 3 Hour Construction: UL System HW-D-0166; RectorSeal MetaCaulk 1200 Spray.
   f. 2 Hour Construction: UL System HW-D-0268; Hilti CP 606 Flexible Firestop Sealant.
   g. 2 Hour Construction: UL System HW-D-0312; Specified Technologies Inc. SIL Silicone Sealant.
   h. Or Approved Equal.
4. Concrete/Concrete Masonry Wall-to-Wall Joint Systems That Have Not Been Tested For Movement Capabilities (Static-S):
   a. 3 Hour Construction: UL System WW-S-0038; Specified Technologies Inc. SIL Silicone Sealant.
   b. 3 Hour Construction: UL System WW-S-0049; Specified Technologies Inc. SIL Silicone Sealant.
   c. 2 Hour Construction: UL System WW-S-1025; RectorSeal MetaCaulk 835+.
   d. Or Approved Equal.
5. Concrete/Concrete Masonry Wall-to-Wall Joint Systems That Have Movement Capabilities (Dynamic-D):
   a. 4 Hour Construction: UL System WW-D-0054; RectorSeal MetaCaulk Joint Strip.
   b. 3 Hour Construction: UL System WW-D-0023; RectorSeal MetaCaulk 1200 Spray.
   c. 3 Hour Construction: UL System WW-D-0095; RectorSeal MetaCaulk 150+.
   d. 3 Hour Construction: UL System WW-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
   e. 3 Hour Construction: UL System WW-D-1007; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   f. 3 Hour Construction: UL System WW-D-1028; RectorSeal MetaCaulk 1200 Spray.

g. 3 Hour Construction: UL System WW-D-1037; Specified Technologies Inc. AS200 Elastomeric Spray.
h. 2 Hour Construction: UL System WW-D-0025; RectorSeal MetaCaulk 1200 Spray.
i. 2 Hour Construction: UL System WW-D-0027; RectorSeal MetaCaulk 150+.
j. 2 Hour Construction: UL System WW-D-0110; RectorSeal MetaCaulk 150+.
k. 2 Hour Construction: UL System WW-D-1077; Tremco, TREMstop Acrylic Firestop Sealant.
l. 2 Hour Construction: UL System WW-D-0017; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
m. 2 Hour Construction: UL System WW-D-0032; Hilti CP 606 Flexible Firestop Sealant.
n. Or Approved Equal.

B. Gypsum Board Walls:
1. Wall-to-Wall Joints That Have Not Been Tested For Movement Capabilities (Static-S):
a. 2 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
b. 2 Hour Construction: UL System WW-S-0089; RectorSeal MetaCaulk 150+.
c. 1 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
d. Or Approved Equal.
2. Wall-to-Wall Joints That Have Movement Capabilities (Dynamic-D):
a. 3 Hour Construction: UL System WW-D-0101; RectorSeal MetaCaulk 150+.
b. 2 Hour Construction: UL System WW-D-0180; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
c. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
d. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
e. Or Approved Equal.
3. Head-of-Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
a. 2 Hour Construction: UL System HW-D-0252; Specified Technologies Inc. AS200 Elastomeric Spray.
b. 2 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
c. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
d. Or Approved Equal.
4. Head-of-Wall Joints at Underside of Flat Concrete:
a. 4 Hour Construction: UL System HW-D-0108; RectorSeal MetaCaulk 1200 Spray.
b. 2 Hour Construction: UL System HW-D-0044; Specified Technologies Inc. AS200 Elastomeric Spray.
c. 2 Hour Construction: UL System HW-D-0079; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
d. 2 Hour Construction: UL System HW-D-0371; Specified Technologies Inc. SpeedFlex Joint Profile System.

e. 2 Hour Construction: UL System HW-D-0689; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
f. 2 Hour Construction: UL System HW-D-0696; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
g. 2 Hour Construction: UL System HW-D-0798; RectorSeal Blaze Foam.
h. 2 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
i. 2 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
j. 2 Hour Construction: UL System HW-D-0016; Tremco, TREMstop Acrylic Firestop Sealant.
k. 2 Hour Construction: UL System HW-D-0017; Tremco, TREMstop Acrylic Firestop Sealant.
l. 2 Hour Construction: UL System HW-D-1072; Tremco, TREMstop Acrylic Firestop Sealant.
m. 1 Hour Construction: UL System HW-D-0079; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
n. 1 Hour Construction: UL System HW-D-0371; Specified Technologies Inc. SpeedFlex Joint Profile System.
o. 1 Hour Construction: UL System HW-D-0689; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
p. 1 Hour Construction: UL System HW-D-0696; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
q. 1 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
r. 1 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
s. 1 Hour Construction: UL System HW-D-0016; Tremco, TREMstop Acrylic Firestop Sealant.
t. Or Approved Equal.

5. Head-of-Wall Joints at Concrete Over Metal Deck:
   a. 2 Hour Construction: UL System HW-D-0034; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   b. 2 Hour Construction: UL System HW-D-0043; Specified Technologies Inc. AS200 Elastomeric Spray.
   c. 2 Hour Construction: UL System HW-D-0099; Specified Technologies Inc. SpeedFlex Joint Profile System.
   d. 2 Hour Construction: UL System HW-D-0144; RectorSeal MetaCaulk 150+.
   e. 2 Hour Construction: UL System HW-D-0363; Specified Technologies Inc. SpeedFlex Joint Profile System.
   f. 2 Hour Construction: UL System HW-D-0365; Specified Technologies Inc. SpeedFlex Joint Profile System.
   g. 2 Hour Construction: UL System HW-D-0548; Specified Technologies Inc. SpeedFlex Joint Profile System.
   h. 2 Hour Construction: UL System HW-D-0749; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   i. 2 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
   j. 1 Hour Construction: UL System HW-D-0034; Specified Technologies Inc. ES Elastomeric Firestop Sealant.

k. 1 Hour Construction: UL System HW-D-0099; Specified Technologies Inc. SpeedFlex Joint Profile System.
l. 1 Hour Construction: UL System HW-D-0363; Specified Technologies Inc. SpeedFlex Joint Profile System.
m. 1 Hour Construction: UL System HW-D-0365; Specified Technologies Inc. SpeedFlex Joint Profile System.
n. 1 Hour Construction: UL System HW-D-0548; Specified Technologies Inc. SpeedFlex Joint Profile System.
o. 1 Hour Construction: UL System HW-D-0749; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
p. 1 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
q. Or Approved Equal.

6. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
   a. 2 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   d. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
   e. Or Approved Equal.
7. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
   a. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   b. 2 Hour Construction: UL System HW-D-0103; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   d. Or Approved Equal.
8. Head-of-Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Not Cut to Fit:
   a. 2 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   d. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   e. Or Approved Equal.

2.06 FIRESTOPPING FOR FLOOR-TO-WALL MOVABLE JOINTS

A. Floor-To-Wall Joint System That Have Movement Capabilities (Dynamic-D):
   1. 3 Hour Construction: UL System FW-D-1001; Specified Technologies Inc. SIL Silicone Sealant.

2. 3 Hour Construction: UL System FW-D-1007; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
3. 3 Hour Construction: UL System FW-D-1035; Specified Technologies Inc. AS200 Elastomeric Spray.
4. 2 Hour Construction: UL System FW-D-1069; Tremco, TREMstop Acrylic Firestop Sealant.
5. Or Approved Equal.

2.07 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

A. Blank Openings:
   1. In Floors or Walls:
      a. 4 Hour Construction: UL System C-AJ-0042; RectorSeal MetaCaulk Fire Rated Mortar.
      b. 4 Hour Construction: UL System C-AJ-0088; RectorSeal MetaCaulk Composite Sheet.
      c. 3 Hour Construction: UL System F-A-0031; Specified Technologies Inc. CID Cast-In Devices.
      d. 3 Hour Construction: UL System C-AJ-0015; Specified Technologies Inc. SSM Mortar.
      e. 3 Hour Construction: UL System C-AJ-0045; RectorSeal MetaCaulk Fire Rated Putty.
      f. 3 Hour Construction: UL System C-AJ-0061; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
      g. 3 Hour Construction: UL System C-AJ-0113; Specified Technologies Inc. Composite Sheet.
      h. 3 Hour Construction: UL System C-AJ-0135; Specified Technologies Inc. FP Intumescent Firestop Plug.
      i. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      j. 2 Hour Construction: UL System C-AJ-0015; Specified Technologies Inc. SSM Mortar.
      k. 2 Hour Construction: UL System C-AJ-0116; Specified Technologies Inc. Composite Sheet.
      l. 2 Hour Construction: UL System C-AJ-0136; Specified Technologies Inc. SSM Mortar.
      m. 2 Hour Construction: UL System C-AJ-0171; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
      n. Or Approved Equal.

B. Penetrations Through Floors or Walls By:
   1. Multiple Penetrations in Large Openings:
      a. 2 Hour Construction: UL System C-AJ-2863; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
      b. 3 Hour Construction: UL System C-AJ-8016; Specified Technologies Inc. SSM Mortar.
      c. 3 Hour Construction: UL System C-AJ-8035; Specified Technologies Inc. SSM Mortar.

d. 3 Hour Construction: UL System C-AJ-8047; RectorSeal MetaCaulk 1000.
e. 3 Hour Construction: UL System C-AJ-8093; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
f. 3 Hour Construction: UL System C-AJ-8181; Specified Technologies Inc. Composite Sheet.
g. 3 Hour Construction: UL System C-AJ-8099; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 3 Hour Construction: UL System C-AJ-8110; Hilti CFS-BL Firestop Block.
i. 3 Hour Construction: UL System C-AJ-8133; RectorSeal Fire Rated Mortar.
j. 2 Hour Construction: UL System C-AJ-8143; Hilti FS-ONE MAX Intumescent Firestop Sealant.
k. 2 Hour Construction: UL System C-AJ-8035; Specified Technologies Inc. SSM Mortar.
l. 2 Hour Construction: UL System C-AJ-8042; RectorSeal MetaCaulk 1000.
m. 2 Hour Construction: UL System C-AJ-8055; Specified Technologies Inc. SSP Firestop Putty.
n. 2 Hour Construction: UL System C-AJ-8093; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
o. 2 Hour Construction: UL System C-AJ-8114; Specified Technologies Inc. SSM Mortar.
p. 2 Hour Construction: UL System C-AJ-8115; Specified Technologies Inc. SSM Mortar.
q. 2 Hour Construction: UL System C-AJ-8129; RectorSeal MetaCaulk 1200 Spray.
r. 2 Hour Construction: UL System C-AJ-8149; RectorSeal MetaCaulk 1000.
s. 2 Hour Construction: UL System C-AJ-8171; RectorSeal MetaCaulk Wrap Strip.
t. 2 Hour Construction: UL System C-AJ-8181; Specified Technologies Inc. Composite Sheet.
u. 2 Hour Construction: UL System C-AJ-8220; Specified Technologies Inc. SSM Mortar.
v. Or Approved Equal.

2. Bathtub Drains:
   a. Up to 3 Hour Construction: UL System F-A-1037, F-A-1038, F-A-2094, or F-A-2095; Hilti CP 681 Tub Box Kit.
   b. Up to 3 Hour Construction: UL System F-A-2183; HoldRite HydroFlame HFPTB-NP-0200, HFPTB-TW-0200, TB-NP-0200, or TB-TW-0200.
   c. Or Approved Equal.
3. Uninsulated Metallic Pipe, Conduit, and Tubing:
   a. 3 Hour Construction: UL System C-AJ-1076; RectorSeal MetaCaulk 950.
   b. 3 Hour Construction: UL System C-AJ-1079; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-1089; Specified Technologies Inc. SSM Mortar.
   d. 3 Hour Construction: UL System C-AJ-1184; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   e. 3 Hour Construction: UL System C-AJ-1198; Specified Technologies Inc. SIL Silicone Sealant.

f. 3 Hour Construction: UL System C-AJ-1215; Specified Technologies Inc. LC Endothermic Firestop Sealant.
g. 3 Hour Construction: UL System C-AJ-1217; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
h. 3 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
i. 3 Hour Construction: UL System C-AJ-1261; RectorSeal MetaCaulk 1000.
j. 3 Hour Construction: UL System C-AJ-1320; RectorSeal MetaCaulk 1000.
k. 3 Hour Construction: UL System C-AJ-1353; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
l. 3 Hour Construction: UL System C-AJ-1421; Hilti FS-ONE MAX Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant.
m. 3 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
n. 3 Hour Construction: UL System C-AJ-1718; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
o. 2 and 3 Hour Construction: UL System C-AJ-1696; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
p. 2 Hour Construction: UL System C-AJ-1036; RectorSeal MetaCaulk 950.
q. 2 Hour Construction: UL System C-AJ-1090; Specified Technologies Inc. SSP Firestop Putty.
r. 2 Hour Construction: UL System C-AJ-1186; RectorSeal MetaCaulk 950.
s. 2 Hour Construction: UL System C-AJ-1198; Specified Technologies Inc. SIL Silicone Sealant.
t. 2 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
u. 2 Hour Construction: UL System C-AJ-1240; Specified Technologies Inc. LC Endothermic Firestop Sealant.
v. 2 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
w. 1 Hour Construction: UL System C-AJ-1039; RectorSeal MetaCaulk 950.
x. Or Approved Equal.

4. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
   a. 3 Hour Construction: UL System C-AJ-2842; HoldRite HydroFlame Pipe Collar.
   b. 3 Hour Construction: UL System C-AJ-2848; HoldRite HydroFlame Wrap Strip and HydroFlame 200 Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-2851; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   d. 3 Hour Construction: UL System C-AJ-2106; Specified Technologies Inc. SSW Wrap Strips.
   e. 3 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
   f. 3 Hour Construction: UL System C-AJ-2151; RectorSeal MetaCaulk 1200.
   g. 3 Hour Construction: UL System C-AJ-2220; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   h. 3 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSC Collars.

i. 3 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSW Wrap Strips.
j. 3 Hour Construction: UL System C-AJ-2342; Hilti CP-E/S Firestop Wrap Strip.
k. 3 Hour Construction: UL System C-AJ-2661; RectorSeal MetaCaulk 1000.
l. 2 and 3 Hour Construction: UL System C-AJ-2843; HoldRite HydroFlame Pipe Collar.
m. 2 Hour Construction: UL System C-AJ-2047; RectorSeal MetaCaulk 1000.
n. 2 Hour Construction: UL System C-AJ-2167; Hilti FS-ONE MAX Intumescent Firestop Sealant.
o. 2 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
p. 2 Hour Construction: UL System C-AJ-2106; Specified Technologies Inc. SSW Wrap Strips.
q. 2 Hour Construction: UL System C-AJ-2282; Specified Technologies Inc. SSW Wrap Strips.
r. 2 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSC Collars.
s. 2 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSW Wrap Strips.
t. 2 Hour Construction: UL System C-AJ-2298; Specified Technologies Inc. LCC Intumescent Firestop Collars.
u. 2 Hour Construction: UL System C-AJ-2348; RectorSeal MetaCaulk 150+.
v. 2 Hour Construction: UL System C-AJ-2588; Specified Technologies Inc. RTC Range-Taking Collar.
w. 2 Hour Construction: UL System C-AJ-2707; RectorSeal MetaCaulk 1000.
x. 2 Hour Construction: UL System C-AJ-2772; Specified Technologies Inc. SSW Wrap Strips.
y. 2 Hour Construction: UL System C-BJ-2021; Hilti CP 643N Firestop Collar.
z. Or Approved Equal.

5. Electrical Cables Not In Conduit:
   a. 3 Hour Construction: UL System C-AJ-3085; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   b. 3 Hour Construction: UL System C-AJ-3095; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   d. 3 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSP Firestop Putty.
   e. 3 Hour Construction: UL System C-AJ-3208; Hilti CP 618 Firestop Putty Stick.
   f. 3 Hour Construction: UL System C-AJ-3231; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   g. 3 Hour Construction: UL System C-AJ-3312; Specified Technologies Inc. FP Intumescent Firestop Plug.
   h. 3 Hour Construction: UL System C-AJ-3360; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   i. 2 Hour Construction: UL System C-AJ-3213; Specified Technologies Inc. LCC Intumescent Firestop Collars.

j. 2 Hour Construction: UL System C-AJ-3213; Specified Technologies Inc. SSC Collars.
k. 2 Hour Construction: UL System W-J-3046; Specified Technologies Inc. SSP Firestop Putty.
l. 2 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSP Firestop Putty.
m. 2 Hour Construction: UL System C-AJ-3216; Hilti CFS-PL Firestop Plug.
n. 2 Hour Construction: UL System C-AJ-3283; Hilti CP653 Speed Sleeve.
o. 2 Hour Construction: UL System C-AJ-3283; Hilti CFS-SL SK Firestop Sleeve Kit.
p. 2 Hour Construction: UL System C-AJ-3283; Hilti CFS-SL SK Firestop Sleeve Kit with Hilti CFS-SL GP Gangplate.
q. 2 Hour Construction: UL System W-J-3198; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
r. 2 Hour Construction: UL System W-J-3199; Hilti CFS-SL SK Firestop Sleeve Kit.
s. Or Approved Equal.

6. Cable Trays with Electrical Cables:
   a. 3 Hour Construction: UL System C-AJ-4029; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   b. 3 Hour Construction: UL System C-AJ-4093; Hilti CFS-BL Firestop Block.
   c. 2 Hour Construction: UL System C-AJ-4094; Hilti CFS-BL Firestop Block.
   d. Or Approved Equal.
7. Electrical Busways:
   a. 3 Hour Construction: UL System C-AJ-6017; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. Or Approved Equal.
8. Insulated Pipes:
   a. 3 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 3 Hour Construction: UL System C-AJ-5410; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System C-AJ-5048; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant, CP 604 Self-Leveling Firestop Sealant or CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
   d. 2 Hour Construction: UL System C-AJ-5087; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   e. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE IMAX Intumescent Firestop Sealant.
   f. 2 Hour Construction: UL System C-AJ-5138; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
   g. 2 Hour Construction: UL System C-AJ-5313; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   h. Or Approved Equal.
9. HVAC Ducts, Uninsulated:
   a. 3 Hour Construction: UL System C-AJ-7051; Hilti FS-ONE MAX Intumescent Firestop Sealant.

b. 3 Hour Construction: UL System C-AJ-7204; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
c. 2 Hour Construction: UL System C-AJ-7111; Hilti FS-ONE MAX Intumescent Firestop Sealant.
d. Or Approved Equal.

C. Penetrations Through Floors By:
1. Multiple Penetrations in Large Openings:
a. 4 Hour Construction: UL System F-A-0019; RectorSeal Cast-in-Place Firestop Device.
b. 3 Hour Construction: UL System F-A-1224; Hilti CFS-CID U Firestop Cast-In Device.
c. 3 Hour Construction: UL System F-A-3052; HoldRite HydroFlame HFP-Px, HFP-PxB, HFP-Mx, or HFP-MxB Cast-In Device.
d. 3 Hour Construction: UL System F-A-8034; HoldRite HydroFlame HFP-P3, or HFP-P3B Cast-In Device.
e. 2 Hour Construction: UL System F-A-0021; RectorSeal Cast-in-Place Firestop Device.
f. 2 Hour Construction: UL System F-A-8012; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.
g. Or Approved Equal.
2. Uninsulated Metallic Pipe, Conduit, and Tubing:
a. 2 and 3 Hour Construction: UL System F-A-1222; Hilti CFS-CID U Firestop Cast-In Device.
b. 3 Hour Construction: UL System F-A-1110; Specified Technologies Inc. CID Cast-In Device.
c. 3 Hour Construction: UL System F-B-1038; HoldRite HydroFlame HFP-M/P8, HFP-M/P10, or HFP-M/P12 Cast-In Device.
d. 2 Hour Construction: UL System F-A-1110; Specified Technologies Inc. CID Cast-In Device.
e. 2 Hour Construction: UL System F-A-1129; Specified Technologies Inc. Closet Flange Firestop Gasket.
f.
3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
a. 2 and 3 Hour Construction: UL System F-A-2411; Hilti CFS-CID U Firestop Cast-In Device.
b. 2 and 3 Hour Construction: UL System F-A-2412; Hilti CFS-CID U Firestop Cast-In Device.
c. 3 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop-In Device.
d. 3 Hour Construction: UL System F-A-2192; Specified Technologies Inc. CID Cast-In Device.
e. 3 Hour Construction: UL System F-A-2246; Specified Technologies Inc. CID Cast-In Device.
f. 3 Hour Construction: UL System F-B-1038; HoldRite HydroFlame HFP-P8, HFP-P10, or HFP-P12 Cast-In Device.
g. 2 and 3 Hour Construction: UL System F-A-1133; HoldRite HydroFlame HFP-Px, HFP-PxB Cast-In Device.
h. 2 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop-In Device.

i. 2 Hour Construction: UL System F-A-2216; Specified Technologies Inc. Closet Flange Firestop Gasket.
j. 2 Hour Construction: UL System F-A-2246; Specified Technologies Inc. CID Cast-In Device.
k. Or Approved Equal.

4. Electrical Cables Not In Conduit:
   a. 3 Hour Construction: UL System F-A-3021; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   b. 3 Hour Construction: UL System F-A-3029; Specified Technologies Inc. Ready-Sleeve.
   c. 3 Hour Construction: UL System F-A-3037; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   d. 3 Hour Construction: UL System F-A-3054; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   e. 2 and 3 Hour Construction: UL System F-A-3091; Hilti CFS-CID U Firestop Cast-In Device.
   f. 3 Hour Construction: UL System F-A-3052; HoldRite HydroFlame HFP-Px, HFP-PxB, HFP-Mx, or HFP-MxB Cast-In Device.
   g. 2 Hour Construction: UL System F-A-3032; Specified Technologies Inc. Ready Split Sleeve.
   h. 2 Hour Construction: UL System F-A-3058; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   i. Or Approved Equal.
5. Electrical Busways:
   a. 3 Hour Construction: UL System C-AJ-6017; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.
   b. 2 Hour Construction: UL System F-A-6002; Hilti CP 604 Self-Leveling Firestop Sealant.
   c. Or Approved Equal.
6. Insulated Pipes:
   a. 2 and 3 Hour Construction: UL System F-A-5083; Hilti CFS-CID U Firestop Cast-In Device.
   b. 2 and 3 Hour Construction: UL System F-A-5084; Hilti CFS-CID U Firestop Cast-In Device.
   c. 3 Hour Construction: UL System F-A-5041; Specified Technologies Inc. CID Cast-In Device.
   d. 3 Hour Construction: UL System F-A-5045; Specified Technologies Inc. CID Cast-In Device.
   e. 3 Hour Construction: UL System F-A-5013; HoldRite HydroFlame HFP-M/P8, HFP-M/P10, or HFP-M/P12 Cast-In Device.
   f. 2 and 3 Hour Construction: UL System F-A-5043; HoldRite HydroFlame HFP-Px, or HFP-PxB Cast-In Device.
   g. 2 Hour Construction: UL System F-A-5041; Specified Technologies Inc. CID Cast-In Device.
   h. 2 Hour Construction: UL System F-A-5045; Specified Technologies Inc. CID Cast-In Device.
   i. Or Approved Equal.

D. Penetrations Through Walls By:

1. Uninsulated Metallic Pipe, Conduit, and Tubing:
   a. 3 Hour Construction: UL System C-AJ-1700; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 1 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   d. Or Approved Equal.
2. Electrical Cables Not In Conduit:
   a. 4 Hour Construction: UL System W-J-3142; Specified Technologies Inc. Ready-Sleeve.
   b. 4 Hour Construction: UL System W-J-3157; Specified Technologies Inc. Ready Split Sleeve.
   c. 4 Hour Construction: UL System W-J-3195; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   d. 2 Hour Construction: UL System C-AJ-3357; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   e. 2 Hour Construction: UL System C-AJ-3095; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   f. 2 Hour Construction: UL System C-AJ-3216; Hilti CFS-PL Firestop Plug.
   g. 2 Hour Construction: UL System W-J-3090; Specified Technologies Inc. SSP Firestop Putty.
   h. 2 Hour Construction: UL System W-J-3098; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   i. 2 Hour Construction: UL System W-J-3130; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   j. 2 Hour Construction: UL System W-J-3138; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   k. 2 Hour Construction: UL System W-J-3141; Specified Technologies Inc. Ready-Sleeve.
   l. 2 Hour Construction: UL System W-J-3156; Specified Technologies Inc. Ready Split Sleeve.
   m. 2 Hour Construction: UL System W-J-3158; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   n. 2 Hour Construction: UL System W-J-3180; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   o. 2 Hour Construction: UL System W-J-3182; Specified Technologies Inc. Ready Split Sleeve.
   p. 2 Hour Construction: UL System W-J-3182; Specified Technologies Inc. Ready-Sleeve.
   q. Or Approved Equal.
3. Insulated Pipes:
   a. 2 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System C-AJ-5407; HoldRite HydroFlame 200 Intumescent Firestop Sealant.

d. 1 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
e. 1 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
f. Or Approved Equal.

4. HVAC Ducts, Uninsulated:
   a. 3 Hour Construction: UL System C-AJ-7204; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-J-7092; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   c. 2 Hour Construction: UL System W-J-7109; Hilti FS-ONE MAX Intumescent Firestop Sealant, or CP 606 Flexible Firestop Sealant.
   d. Or Approved Equal.
5. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-J-7112; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. Or Approved Equal.

2.08 FIRESTOPPING PENETRATIONS THROUGH FRAMED FLOORS

A. Metallic Pipe, Conduit, and Tubing Penetrations in Framed Floors:
   1. 1 and 2 Hour Construction: UL System F-C-1177; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   2. 1 Hour Construction: UL System F-C-1053; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   3. 1 Hour Construction: UL System F-C-1162; Specified Technologies Inc. Closet Flange Firestop Gasket.
   4. Or Approved Equal.

B. Non-Metallic Pipe, Conduit or Tubing in Framed Floors:
   1. 2 Hour Construction: UL System F-C-2020; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   2. 2 Hour Construction: UL System F-C-2020; Specified Technologies Inc. SSC collars.
   3. 2 Hour Construction: UL System F-C-2348; Specified Technologies Inc. RTC Range-Taking Collar.
   4. 2 Hour Construction: UL System F-C-2402; Specified Technologies Inc. Closet Flange Firestop Gasket.
   5. 1 and 2 Hour Construction: UL System F-C-2473; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   6. 1 Hour Construction: UL System F-C-2487; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   7. 1 Hour Construction: UL System F-C-2014; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   8. 1 Hour Construction: UL System F-C-2020; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   9. 1 Hour Construction: UL System F-C-2020; Specified Technologies Inc. SSC Collars.
   10. 1 Hour Construction: UL System F-C-2077; RectorSeal MetaCaulk 1000.

11. 1 Hour Construction: UL System F-C-2089; RectorSeal MetaCaulk 1000.
12. 1 Hour Construction: UL System F-C-2130; RectorSeal MetaCaulk 1000.
13. 1 Hour Construction: UL System F-C-2326; RectorSeal MetaCaulk 350i.
14. 1 Hour Construction: UL System F-C-2348; Specified Technologies Inc. RTC Range-Taking Collar.
15. 1 Hour Construction: UL System F-C-2402; Specified Technologies Inc. Closet Flange Firestop Gasket.
16. Or Approved Equal.

C. Electrical Cable in Framed Floors:
1. 1 Hour Construction: UL System F-C-3010; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
2. 1 and 2 Hour Construction: UL System F-C-3121; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
3. Or Approved Equal.

D. Insulated Pipe in Framed Floors:
1. 2 Hour Construction: UL System F-C-5090; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
2. 1 Hour Construction: UL System F-C-5043; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
3. Or Approved Equal.

2.09 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

A. Blank Openings:
1. 4 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
2. 3 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
3. 2 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
4. 2 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
5. 2 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
6. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
7. 1 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
8. 1 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
9. 1 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
10. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
11. Or Approved Equal.

B. Penetrations By:
1. Multiple Penetrations in Large Openings:
   a. 2 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.

c. 2 Hour Construction: UL System W-L-8025; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
d. 2 Hour Construction: UL System W-L-8050; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
e. 2 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
f. 2 Hour Construction: UL System W-L-8073; Specified Technologies Inc. Composite Sheet.
g. 2 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 1 and 2 Hour Construction: UL System W-L-1568; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
i. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
j. 1 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
k. 1 Hour Construction: UL System W-L-8025; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
l. 1 Hour Construction: UL System W-L-8050; Specified Technologies Inc. SSB Intumescent Firestop pillows.
m. 1 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
n. 1 Hour Construction: UL System W-L-8073; Specified Technologies Inc. Composite Sheet.
o. 1 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
p. Or Approved Equal.

2. Uninsulated Metallic Pipe, Conduit, and Tubing:
a. 3 and 4 Hour Construction: UL System W-L-1560; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
b. 2 Hour Construction: UL System W-L-1033; Specified Technologies Inc. SIL Silicone Sealant.
c. 2 Hour Construction: UL System W-L-1042; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
d. 2 Hour Construction: UL System W-L-1049; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
e. 2 Hour Construction: UL System W-L-1090; Specified Technologies Inc. LC Endothermic Firestop Sealant.
f. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
g. 2 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 2 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
i. 2 Hour Construction: UL System W-L-1477; Specified Technologies Inc. EZ Firestop Grommet.
j. 2 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.
k. 1 and 2 Hour Construction: UL System W-L-1558; HoldRite HydroFlame 100 Intumescent Firestop Sealant.

l. 1 and 2 Hour Construction: UL System W-L-1558; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
m. 1 Hour Construction: UL System W-L-1042; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
n. 1 Hour Construction: UL System W-L-1049; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
o. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
p. 1 Hour Construction: UL System W-L-1090; Specified Technologies Inc. LC Endothermic Firestop Sealant.
q. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
r. 1 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
s. 1 Hour Construction: UL System W-L-1477; Specified Technologies Inc. EZ Firestop Grommet.
t. 1 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.
u.

3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
   a. 4 Hour Construction: UL System W-L-2704; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-2048; Specified Technologies Inc. SSW Wrap Strips.
   c. 2 Hour Construction: UL System W-L-2074; Specified Technologies Inc. SSC Collars.
   d. 2 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
   e. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   f. 2 Hour Construction: UL System W-L-2237; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   g. 2 Hour Construction: UL System W-L-2241; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   h. 2 Hour Construction: UL System W-L-2243; Specified Technologies Inc. SSW Wrap Strips.
   i. 2 Hour Construction: UL System W-L-2493; Specified Technologies Inc. RTC Range-Taking Collar.
   j. 1 and 2 Hour Construction: UL System W-L-2710; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   k. 1 Hour Construction: UL System W-L-2048; Specified Technologies Inc. SSW Wrap Strips.
   l. 1 Hour Construction: UL System W-L-2074; Specified Technologies Inc. SSC Collars.
   m. 1 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
   n. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   o. 1 Hour Construction: UL System W-L-2237; Specified Technologies Inc. LCC Intumescent Firestop Collars.

p. 1 Hour Construction: UL System W-L-2241; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
q. 1 Hour Construction: UL System W-L-2243; Specified Technologies Inc. SSW Wrap Strips.
r. 1 Hour Construction: UL System W-L-2493; Specified Technologies Inc. RTC Range-Taking Collar.
s. Or Approved Equal.

4. Electrical Cables Not In Conduit:
   a. 4 Hour Construction: UL System W-L-3276; Specified Technologies Inc. Ready-Sleeve.
   b. 4 Hour Construction: UL System W-L-3304; Specified Technologies Inc. Ready Split Sleeve.
   c. 4 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   d. 3 Hour Construction: UL System W-L-3276; Specified Technologies Inc. Ready-Sleeve.
   e. 3 Hour Construction: UL System W-L-3304; Specified Technologies Inc. Ready Split Sleeve.
   f. 3 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   g. 2 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.
   h. 2 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
   i. 2 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   j. 2 Hour Construction: UL System W-L-3084; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   k. 2 Hour Construction: UL System W-L-3135; Specified Technologies Inc. SSP Firestop Putty.
   l. 2 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
   m. 2 Hour Construction: UL System W-L-3218; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   n. 2 Hour Construction: UL System W-L-3255; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   o. 2 Hour Construction: UL System W-L-3256; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   p. 2 Hour Construction: UL System W-L-3265; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   q. 2 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
   r. 2 Hour Construction: UL System W-L-3306; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   s. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
   t. 2 Hour Construction: UL System W-L-3350; Specified Technologies Inc. LC Endothermic Firestop Sealant.

u. 2 Hour Construction: UL System W-L-3357; Specified Technologies Inc. FP Intumescent Firestop Plug.
v. 2 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Split Sleeve.
w. 2 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready-Sleeve.
x. 2 Hour Construction: UL System W-L-3369; Specified Technologies Inc. EZ Firestop Grommet.
y. 2 Hour Construction: UL System W-L-3370; Specified Technologies Inc. EZ Firestop Grommet.
z. 2 Hour Construction: UL System W-L-3374; Specified Technologies Inc. FP Intumescent Firestop Plug.
aa. 2 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready-Sleeve.
bb. 2 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
cc. 2 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
dd. 2 Hour Construction: UL System W-L-3378; Specified Technologies Inc. EZ Firestop Grommet.
ee. 2 Hour Construction: UL System W-L-3379; Specified Technologies Inc. EZ Firestop Grommet.
ff. 2 Hour Construction: UL System W-L-3390; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
gg. 2 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
hh. 2 Hour Construction: UL System W-L-3395; Hilti CP653 Speed Sleeve.
ii. 2 Hour Construction: UL System W-L-3395; Hilti CFS-SL SK Firestop Sleeve Kit.
jj. 2 Hour Construction: UL System W-L-3395; Hilti CFS-SL SK Firestop Sleeve Kit with Hilti CFS-SL GP Gangplate.
kk. 2 Hour Construction: UL System W-L-3414; Hilti CFS-D Firestop Cable Disc.
ll. 1 and 2 Hour Construction: UL System W-L-3453; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
mm. 1 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.
nn. 1 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
oo. 1 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
pp. 1 Hour Construction: UL System W-L-3084; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
qq. 1 Hour Construction: UL System W-L-3135; Specified Technologies Inc. SSP Firestop Putty.
rr. 1 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
ss. 1 Hour Construction: UL System W-L-3218; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.

tt. 1 Hour Construction: UL System W-L-3255; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
uu. 1 Hour Construction: UL System W-L-3256; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
vv. 1 Hour Construction: UL System W-L-3265; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
ww. 1 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
xx. 1 Hour Construction: UL System W-L-3306; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
yy. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
zz. 1 Hour Construction: UL System W-L-3350; Specified Technologies Inc. LC Endothermic Firestop Sealant.
aaa. 1 Hour Construction: UL System W-L-3357; Specified Technologies Inc. FP Intumescent Firestop Plug.
bbb. 1 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Split Sleeve.
ccc. 1 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready-Sleeve.
ddd. 1 Hour Construction: UL System W-L-3369; Specified Technologies Inc. EZ Firestop Grommet.
eee. 1 Hour Construction: UL System W-L-3370; Specified Technologies Inc. EZ Firestop Grommet.
fff. 1 Hour Construction: UL System W-L-3374; Specified Technologies Inc. FP Intumescent Firestop Plug.
ggg. 1 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready-Sleeve.
hhh. 1 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
iii. 1 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
jjj. 1 Hour Construction: UL System W-L-3378; Specified Technologies Inc. EZ Firestop Grommet.
kkk. 1 Hour Construction: UL System W-L-3379; Specified Technologies Inc. EZ Firestop Grommet.
lll. 1 Hour Construction: UL System W-L-3390; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
mmm. 1 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
nnn. 1 Hour Construction: UL System W-L-3414; Hilti CFS-D Firestop Cable Disc.
ooo.

5. Cable Trays with Electrical Cables:
   a. 2 Hour Construction: UL System W-L-4008; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   b. 2 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
   c. 2 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.

d. 1 Hour Construction: UL System W-L-4008; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
e. 1 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
f. 1 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
g. Or Approved Equal.

6. Insulated Pipes:
   a. 2 Hour Construction: UL System W-L-5014; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
   d. 2 Hour Construction: UL System W-L-5121; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
   e. 2 Hour Construction: UL System W-L-5273; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   f. 2 Hour Construction: UL System W-L-5298; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   g. 1 Hour Construction: UL System W-L-5014; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   h. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   i. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
   j. 1 Hour Construction: UL System W-L-5121; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
   k. 1 Hour Construction: UL System W-L-5273; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   l. 1 Hour Construction: UL System W-L-5298; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   m. 1 and 2 Hour Construction: UL System W-L-5357; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   n. Or Approved Equal

7. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   c. 2 Hour Construction: UL System W-L-7238; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   d. 1 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   e. 1 Hour Construction: UL System W-L-7238; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   f. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   g. Or Approved Equal.

8. Shower Valve Penetration, Uninsulated:

a. 1 and 2 Hour Construction: UL System W-L-7325; Fire Shield, LLC; Barri-Ring.
b. 1 and 2 Hour Construction: UL System W-L-7249; Fire Shield, LLC; Barri-Box.
c. Or Approved Equal.

9. Wall Penetration Box, Uninsulated:
   a. 1 and 2 Hour Construction: UL System W-L-7248; Fire Shield, LLC; Barricade.
   b. Or Approved Equal.

2.10 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
B. Remove incompatible materials that could adversely affect bond.
C. Install backing materials to prevent liquid material from leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
B. Do not cover installed firestopping until inspected by Owner's Independent Testing Agency.
C. Do not cover installed firestopping until inspected by authorities having jurisdiction.
D. Install labeling required by code.

3.04 FIELD QUALITY CONTROL

A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174 and ASTM E2393.
B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.06 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION 078400

SECTION 079200 - JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.
B. Self-leveling pourable joint sealants.
C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).
B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).
C. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.
D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016 (Reapproved 2023).
E. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.
F. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).
G. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
H. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
    1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
    2. List of backing materials approved for use with the specific product.
    3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
    4. Substrates the product should not be used on.
C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

D. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

E. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

F. Executed warranty.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
   1. Adhesion Testing: In accordance with ASTM C794.
   2. Compatibility Testing: In accordance with ASTM C1087.
   3. Allow sufficient time for testing to avoid delaying the work.
   4. Deliver sufficient samples to manufacturer for testing.
   5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.

1.06 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

C. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
   1. Pecora Corporation: www.pecora.com/#sle.
   2. Sika Corporation: www.usa.sika.com/#sle.
   3. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   4. Or Approved Equal.
   5. Substitutions: See Section 016000 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:

1. Exterior Joints:
   a. Seal the following joints:
      1) Wall expansion and control joints.
      2) Joints between doors, windows, and other frames or adjacent construction.
      3) Joints between different exposed materials.
2. Interior Joints:
   a. Seal the following joints:
      1) Joints between door frames and window frames and adjacent construction.
      2) In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, and piping penetrations.
      3) In sound-rated wall and ceiling assemblies, seal joints between wall assemblies and ceiling assemblies; between wall assemblies and other construction; between ceiling assemblies and other construction.
3. Do Not Seal:
   a. Intentional weep holes in masonry.
   b. Joints indicated to be covered with expansion joint cover assemblies.
   c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
   d. Joints where sealant installation is specified in other sections.

B. Exterior Joints: Use nonsag nonstaining silicone sealant, unless otherwise indicated.

C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
   1. Joints between Tile in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.

D. Interior Wet Areas: restrooms; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.

2.03 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

2.04 NONSAG JOINT SEALANTS

A. Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
   1. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
   2. Color: Match adjacent finished surfaces.
   3. Service Temperature Range: Minus 20 to 180 degrees F.
   4. Products:
      a. Adfast USA Inc; Adseal LM 4600 Series: www.adfastcorp.com/#sle.
      b. Dow; DOWSIL 756 SMS Building Sealant: www.dow.com/#sle.
      c. Momentive Performance Materials, Inc/GE Silicones; SCS9000 SilPruf NB - Non-Staining Silicone Weatherproofing Sealant: www.siliconeforbuilding.com/#sle.

d. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
e. Sika Corporation; Sikasil WS-290: www.usa.sika.com/#sle.
f. Tremco Commercial Sealants & Waterproofing; Spectrem 1: www.tremcosealants.com/#sle.
g. Or Approved Equal.
h. Substitutions: See Section 016000 - Product Requirements.

B. Silicone Sealant: ASTM C920, Grade NS, Use T; single component, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
1. Movement Capability: Plus 100 percent and minus 50 percent, minimum.
2. Color: To be selected by Architect from manufacturer's standard range.
3. Products:
a. Dow; DOWSIL 888 Silicone Joint Sealant: www.dow.com/#sle.
b. Pecora Corporation; Pecora PCS: www.pecora.com/#sle.
c. Pecora Corporation; Pecora 301 NS (Non-Sag): www.pecora.com/#sle.
d. Tremco Commercial Sealants & Waterproofing; Spectrem 800: www.tremcosealants.com/#sle.
e. Or Approved Equal.
f. Substitutions: See Section 016000 - Product Requirements.

C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Products:
a. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
b. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.
c. Or Approved Equal.
d. Substitutions: See Section 016000 - Product Requirements.

D. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
3. Color: Match adjacent finished surfaces.
4. Service Temperature Range: Minus 40 to 180 degrees F.
5. Products:
a. Pecora Corporation; DynaTrol II: www.pecora.com/#sle.
b. Sika Corporation; Sikaflex-1a: www.usa.sika.com/#sle.
c. Tremco Commercial Sealants & Waterproofing; Dymonic 100: www.tremcosealants.com/#sle.
d. Or Approved Equal.
e. Substitutions: See Section 016000 - Product Requirements.

2.05 ACCESSORIES

A. Sealant Backing Rod, Closed-Cell Type:

1. Cylindrical flexible sealant backings complying with ASTM C1330 Type C.
2. Size: 25 to 50 percent larger in diameter than joint width.
3. Products:
   a. Nomaco, Inc; HBR: www.nomaco.com/#sle.
   b. Or Approved Equal.
   c. Substitutions: See Section 016000 - Product Requirements.

B. Preformed Extruded Silicone Joint Seal: Pre-cured low-modulus silicone extrusion, in sizes to fit applications indicated on drawings, combined with a neutral-curing liquid silicone sealant for bonding joint seal to substrates.
1. Size: 1 inch wide, in rolls 100 feet long.
2. Thickness: 0.78 inch, with ridges along outside bottom edges for bonding area.
3. Color: As selected by Architect..
4. Durometer Hardness, Type A: 26 to 32, minimum, when tested in accordance with ASTM D2240.
5. Tensile Strength: 218 psi, in accordance with ASTM D412.
6. Products:
   a. Tremco Commercial Sealants & Waterproofing; Spectrem Simple Seal: www.tremcosealants.com/#sle.
   b. Or Approved Equal.
   c. Substitutions: See Section 016000 - Product Requirements.

C. Preformed Extruded Polyurethane Joint Seal: Medium-modulus, preformed polyurethane extrusion used to bridge joints under elastomeric wall coatings, in sizes to fit applications indicated on drawings, combined with polyurethane sealant for bonding joint seal to substrates.
1. Size: 1-1/2 inch wide, in rolls 100 feet long.
2. Thickness: 0.051 inch, with ridges along outside bottom edges for bonding area.
3. Durometer Hardness, Type A: 55, minimum, when tested in accordance with ASTM D2240.
4. Tensile Strength: 532 psi, in accordance with ASTM D412.
5. Elongation at Break: 690 percent, in accordance with ASTM D412.
6. Products:
   a. Or Approved Equal
   b. Substitutions: See Section 016000 - Product Requirements.

D. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

E. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

F. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

D. Repair destructive test location damage immediately after evaluation and recording of results.

3.05 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width, i.e., at low temperature in thermal cycle. Report failures immediately and repair them.

END OF SECTION 079200

SECTION 090561 - COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
B. Removal of existing floor coverings.
C. Preparation of new and existing concrete floor slabs for installation of floor coverings.
D. Testing of concrete floor slabs for moisture and alkalinity (pH).
E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.
F. Patching compound.
G. Remedial floor coatings.
H. Remedial floor treatment.

1.02 RELATED REQUIREMENTS

A. Section 014000 - Quality Requirements: Additional requirements relating to testing agencies and testing.
B. Section 017419 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.
C. Section 033000 - Cast-in-Place Concrete: Concrete admixture for slabs to receive adhered flooring, to prevent moisture content-related flooring failures.
D. Section 033000 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.
E. Section 035400 - Cast Underlayment: Self-leveling underlayment applied as remediation treatment.

1.03 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2023.
B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.
E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
F. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 SUBMITTALS

A. Visual Observation Report: For existing floor coverings to be removed.
B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.
C. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
D. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report to Architect.
   7. Submit report not more than two business days after conclusion of testing.
E. Adhesive Bond and Compatibility Test Report.
F. Copy of RFCI (RWP).

1.06 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
B. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.
C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
D. Contractor's Responsibility Relating to Independent Agency Testing:

1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow at least 4 business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.
5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

E. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.08 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   3. Products:
      a. ARDEX Engineered Cements; ARDEX Feather Finish
      b. Floor Seal Technology, Inc; Color Match Patch
      c. LATICRETE International, Inc; SKIM LITE
      d. USG Corporation; Durock Brand Advanced Skim Coat Floor Patch
      e. Or approved equal.
      f. Substitutions: See Section 016000-Product Requirements.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
   2. Products:
      a. ARDEX Engineered Cements; ARDEX VB 100
      b. Bona US; R540
      c. Floor Seal Technology, Inc; MES 100
      d. LATICRETE International, Inc; LATICRETE VAPOR BAN E
      e. Mapei Corporation; Planiseal VS
      f. Sika Corporation; Sikafloor Moisture Tolerance Epoxy Primer
      g. Or approved equal.
      h. Substitutions: See Section 016000-Product Requirements.

D. Remedial Floor Treatment: Penetrating, spray-applied, silicate-based product intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:
   1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
      a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
      b. Removal of existing floor covering.
   2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
      a. Do not attempt to remove coating or penetrating material.
      b. Do not abrade surface.
      c. Remove existing coatings and curing agents from surface according to recommendations of remedial coating manufacturer.
   3. Preliminary cleaning.
   4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
   5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

6. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
7. Specified remediation, if required.
8. Patching, smoothing, and leveling, as required.
9. Other preparation specified.
10. Adhesive bond and compatibility test.
11. Protection.

C. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL OF EXISTING FLOOR COVERINGS

A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.

B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.

3.03 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.06 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
   1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
   2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
   3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.08 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.09 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.10 APPLICATION OF REMEDIAL FLOOR TREATMENT

A. Comply with requirements and recommendations of treatment manufacturer.

3.11 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION 090561

SECTION 092116 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.
B. Metal stud wall framing.
C. Metal channel ceiling framing.
D. Resilient sound isolation clips.
E. Acoustic insulation.
F. Gypsum sheathing.
G. Cementitious backing board.
H. Gypsum wallboard.
I. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 054000 - Cold-Formed Metal Framing: Structural steel stud framing.
B. Section 061000 - Rough Carpentry: Building framing and sheathing.
C. Section 061000 - Rough Carpentry: Wood blocking product and execution requirements.
D. Section 072700 - Air Barriers: Air- and water-resistive barrier over sheathing.
E. Section 078400 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.
F. Section 079200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. AISI S201 - North American Standard for Cold-Formed Steel Framing - Product Data; 2017.
B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.
C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).
D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.
E. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.
F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
H. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.
I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
J. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).
K. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).
L. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.
M. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2023.
N. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.
O. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2023.
P. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.
Q. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.
R. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.
S. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).
T. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.
U. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels; 2023.
V. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.
W. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
X. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.
Y. ASTM E413 - Classification for Rating Sound Insulation; 2022.
Z. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.
AA. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum; 2021a.
BB. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2024.
CC. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.
DD. GA-226 - Application of Gypsum Board to Form Curved Surfaces; 2025.

EE. GA-600 - Fire Resistance and Sound Control Design Manual; 2024.

FF. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

GG. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers; 2016, with Editorial Revision (2021).

HH. UL (FRD) - Fire Resistance Directory; Current Edition.

II. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

JJ. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of gypsum board assemblies with size, location, and installation of service utilities.

B. Sequencing: Install service utilities in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.
   2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

C. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

D. Steel Framing Industry Association (SFIA) Certification:
   1. Submit documentation that metal studs and connectors used on project meet or exceed requirements of International Building Code.

E. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.06 DELIVERY, STORAGE, AND HANDLING

A. See Section 017419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store gypsum products and accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in accordance with manufacturer's recommendations.

C. Store metal products to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 50-54 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
   1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
   2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

D. Grid Suspension Systems: Provide grid suspension systems in accordance with ASTM C840 and GA-216 complying with the following:
   1. ICC-ES Evaluation Report No. ESR-1338.

E. Fire-Resistance-Rated Assemblies: Provide completed assemblies complying with applicable code.
   1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 METAL FRAMING MATERIALS

A. Material and Product Requirements Criteria: AISI S201.

B. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
   1. Corrosion Protection Coating Designation: G40, G60 at showers, toilet rooms, and other interior locations subject to high humidity, steam and water in accordance with AISI S220.

C. Manufacturers - Metal Framing, Connectors, and Accessories: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
   1. CEMCO
   2. ClarkDietrich
   3. Jaimes Industries
   4. MarinoWARE
   5. SCAFCO Corporation
   6. Or Approved Equal.
   7. Substitutions: See Section 016000 - Product Requirements.

D. Structural Steel Framing for Application of Gypsum Board: See Section 054000.

E. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Studs: ASTM C645 C-shaped with knurled or embossed faces, 0.0329 (20 gauge) min. thickness of base metal unless otherwise indicated.
      a. Depth of Section: 3-5/8”, or as otherwise indicated.
   2. Runners: U shaped, sized to match studs.

3. Ceiling Channels: C-shaped.
4. Flexible Track: Flexible framing consisting of adjustable leg straps and pivoting, hinged track brackets designed to provide curved framing assemblies of varying radii.
    a. Dimensions: 3-5/8 inches deep by 1-3/16 inches high in lengths and configurations indicated.
5. Furring Members: ASTM C645; 0.0179 (25 gauge) Hat-shaped sections, minimum depth of 7/8 inch.
6. Furring Members: U-shaped sections, minimum depth of 3/4 inch.
7. Furring Members: Zee-shaped sections, minimum depth of 1 inch.
8. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.
9. Resilient Sound Isolation Clips: Steel resilient clips with molded rubber isolators, attaches to framing; improves noise isolation performance of wall and floor-ceiling assemblies.
10. Sill Plate Isolation Pads: Acoustical separation between sole plate and subfloor.

F. Shaft Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.

G. Area Separation Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with specified performance requirements.

H. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short.

I. Deflection and Firestop Track: Intumescent strip factory-applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.

J. Preformed Top Track Firestop Seal:
    1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

K. Preformed Top of Wall Firestop Gasket:
    1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

L. Non-structural Framing Accessories:
    1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
    2. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
        a. Materials: ASTM A36/A36M formed sheet steel support member with factory-welded ASTM A1003/A1003M steel plate base.
        b. Height: 35-3/4 inches.
    3. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
    4. Drywall Corner Clips: Drywall clips help support drywall to reduce wood blocking on top plates, end walls, and corners.
    5. Steel Column and Beam Drywall Clip: UL-listed slip-on clips to connect gypsum board to steel beams and columns for fireproofing.

M. Grid Suspension Systems: Aluminum grid system of main tees and support bars connected to structure using hanging wire.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
   1. American Gypsum Company
   2. CertainTeed Corporation
   3. Georgia-Pacific Gypsum
   4. Gold Bond Building Products, LLC
   5. USG Corporation
   6. Or Approved Equal.
   7. Substitutions: See Section 016000 - Product Requirements.

B. Interior Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; Provide panels in maximum lengths and widths available that will minimize joints in each area and correspond with the support system indicated.
   1. Application: Use for vertical surfaces 8'-0" above finished floor, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch thick, unless otherwise indicated, with long ends tapered.
         1) Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
            (a) USG Corporation; Sheetrock Brand Firecode X Panels 5/8 in.
            (b) American Gypsum Company; FireBloc Type X Gypsum Wallboard
            (c) Georgia-Pacific Gypsum; ToughRock Fireguard X
            (d) Or approved equal.
            (e) Substitutions: See Section 016000-Product Requirements.
      b. Flexible Gypsum Wallboard: 1/4 inch, unless otherwise indicated, manufactured to bend to fit tight radii and to be more flexible than standard regular-type panels of the same thickness, with long ends tapered. Apply in double layer at curved assemblies unless additional layers are indicated.
         1) Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
            (a) Gold Bond Building Products, LLC; Gold Bond High Flex Gypsum Board
            (b) USG Corporation; Sheetrock Brand Gypsum Panels
            (c) Georgia-Pacific Gypsum; ToughRock Gypsum Board
            (d) Or approved equal.
            (e) Substitutions: See Section 016000-Product Requirements.
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

5. Mold-Resistant, Paper-Faced Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
    a. American Gypsum Company; M-Bloc Type X
    b. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard
    c. Gold Bond Building Products, LLC; Gold Bond XP Fire-Shield Gypsum Board
    d. USG Corporation; Sheetrock Brand EcoSmart Panels Mold Tough Firecode X
    e. Or approved equal.
    f. Substitutions: See Section 016000 - Product Requirements.

C. Impact Resistant Wallboard:
1. Application: Vertical surfaces up to 8'-0" above finished floor.
2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Hard Body Impact: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
7. Type: Fire-resistance-rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.
10. Paper-Faced Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
    a. American Gypsum Company; M-Bloc IR Type X
    b. CertainTeed Corporation; Extreme Impact Resistant Drywall with M2Tech
    c. Gold Bond Building Products, LLC; Gold Bond XP Hi-Impact Gypsum Board
    d. USG Corporation; Sheetrock Brand Mold Tough VHI Firecode X Panels
    e. Or approved equal.
    f. Substitutions: See Section 016000 - Product Requirements.

D. Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. Application: Horizontal surfaces behind tile in wet areas including countertops and floors.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
    a. Thickness: 5/8 inch.
    b. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
        1) PermaBASE Building Products, LLC; PermaBase Cement Board
        2) USG Corporation; Fiberock Brand Tile Backerboard FRX-G
        3) Or approved equal.

4) Substitutions: See Section 016000 - Product Requirements.

E. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
   1. Application: Vertical surfaces behind thinset tile, except in wet areas.
   2. Type: Type X, in locations indicated.
   3. Type X Thickness: 5/8 inch.
   4. Edges: Tapered.
   5. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
      a. American Gypsum Company; M-Bloc Type X
      b. Georgia-Pacific Gypsum; DensArmor Plus
      c. Gold Bond Building Products, LLC; Gold Bond XP Fire-Shield Gypsum Board
      d. Or approved equal.
      e. Substitutions: See Section 016000 - Product Requirements.

F. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Ceilings, unless otherwise indicated.
   2. Thickness: 1/2 inch.
   3. Edges: Tapered.
   4. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
      a. CertainTeed Corporation; 1/2" Easi-Lite
      b. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond High Strength LITE Gypsum Board
      c. USG Corporation; Sheetrock Brand UltraLight Panels 1/2 in.
      d. Or approved equal.
      e. Substitutions: See Section 016000 - Product Requirements.

G. Exterior Sheathing Board: See Section 061000.

H. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
   2. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X.
   3. Types: Type X, in locations indicated.
   4. Type X Thickness: 5/8 inch.
   5. Edges: Tapered.
   6. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
      a. American Gypsum Company; Exterior Soffit Gypsum Wallboard Type X
      b. CertainTeed Corporation; 5/8" Soffitboard Type X
      c. Or Approved Equal.
      d. Substitutions: See Section 016000 - Product Requirements.

I. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
   1. Paper-Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C1396/C1396M; water-resistant faces.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Paper-Faced Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
      a. Georgia-Pacific Gypsum; ToughRock Shaftliner
      b. Gold Bond Building Products, LLC; Gold Bond Shaftliner XP
      c. USG Corporation; Sheetrock Brand Mold Tough Gypsum Liner Panels 1 in. SLX
      d. Or approve equal.
      e. Substitutions: See Section 016000 - Product Requirements.
   4. Framing: Gypsum Liner Panels attach to metal framing; CH studs. Refer to product data sheet for additional information.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral-fiber, friction fit type, unfaced; thickness of stud.

B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.

C. Air Barrier: See Section 072700.

D. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.
   1. Corner Beads: Low profile, for 90 degree outside corners.
   2. L-Trim with Tear-Away Strip: Sized to fit 1/2-inch thick gypsum wallboard.
   3. Architectural Reveal Beads:
      a. Shapes: As indicated on drawings.
      b. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
         1) Flannery, Inc
         2) Phillips Manufacturing Co
         3) Trim-Tex, Inc
         4) Or approved equal.
         5) Substitutions: See Section 016000 - Product Requirements.
   4. Expansion Joints:
      a. Fire-Resistance Rated: 1 hour when joint system tested in accordance with UL 2079.
      b. Type: V-shaped metal with factory-installed protective tape.

E. Decorative Metal Trim:
   1. Material: Extruded aluminum alloy 6063-T5 temper.
   2. Finish: Anodized, clear.
   3. Type: Profile as selected from manufacturer's standard range.

a. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
   1) Gordon Inc
   2) Pittcon Industries
   3) Tamlyn
   4) Or approved equal.
   5) Substitutions: See Section 016000 - Product Requirements.

F. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners on glass mat gypsum sheathing, except as otherwise indicated.
   2. Paper Tape: 2 inch wide, creased paper tape for joints and corners on interior and exterior gypsum, except as otherwise indicated.
   3. Joint Compound: Setting type, field-mixed. Comply with ASTM C 475 and recommendations of the manufacturer.
      a. For interior gypsum wallboard and exterior gypsum soffit board use setting-type taping compound followed by coats of setting-type sandable topping compound or as otherwise recommended by manufacturer.
      b. For Glass-Mat Gypsum Sheathing Board use type(s) recommended by the manufacturer for the application required at this project.
      c. For tile backing panels use the type recommended by the manufacturer for the application required at this project.

G. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
   1. Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
      a. CertainTeed Corporation; Level V Wall and Ceiling Primer/Surfacer with M2Tech
      b. USG Corporation; USG Sheetrock Brand Tuff-Hide Primer-Surfacer
      c. Or approved equal.
      d. Substitutions: See Section 016000 - Product Requirements.

H. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

I. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

J. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

K. Adhesive for Attachment to Wood, ASTM C557 and Metal:

L. Exterior Soffit Vents: One piece, perforated, ASTM B221 6063 T5 alloy aluminum, with edge suitable for direct application to gypsum board and manufactured especially for soffit application. Provide continuous vent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
   1. Fasten runners to structure with short leg to finished side, using appropriate power-driven fasteners at not more than 24 inches on center.
   2. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimensions and install sequentially between special friction studs.
   1. On walls over sixteen feet high, screw-attach studs to runners top and bottom.
   2. Seal perimeter of shaft wall and penetrations with acoustical sealant.

3.03 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C1007AISI S220 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
   1. Level ceiling system to a tolerance of 1/1200.
   2. Laterally brace entire suspension system.
   3. Install bracing as required at exterior locations to resist wind uplift.

C. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
   3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
   1. Orientation: Horizontal.
   2. Spacing: At 24 inches on center.

F. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.

G. Resilient Sound Isolation Clips: Install resilient sound isolation clips, and where applicable, associated furring sections and channels, in accordance with clip manufacturer's written instructions.

H. Furring for Fire-Resistance Ratings: Install as required for fire-resistance ratings indicated and to GA-600 requirements.

I. Blocking: Install mechanically fastened steel channel blocking for support of:
   1. Framed openings.
   2. Wall-mounted cabinets.
   3. Plumbing fixtures.
   4. Toilet partitions.
   5. Toilet accessories.
   6. Wall-mounted door hardware.

3.04 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Sound Isolation Tape: Apply to vertical studs and top and bottom tracks/runners in accordance with manufacturer's instructions.

C. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place one bead continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

3.05 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

E. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

F. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.
   1. Seal joints, cut edges, and holes with water-resistant sealant.

G. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

H. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

I. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.

3.06 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
   2. At exterior soffits, not more than 30 feet apart in both directions.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

D. Decorative Trim: Install at locations shown on drawings and in accordance with manufacturer's instructions.

E. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings. Provide vent area specified.

3.07 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   3. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
   4. Level 0: Temporary partitions.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

3.08 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.09 CLEANING

A. See Section 017000 - Execution and Closeout Requirements for additional requirements.
B. Clean areas of work.

3.10 PROTECTION

A. Protect installed gypsum board assemblies from subsequent construction operations.

END OF SECTION 092116

SECTION 096500 - RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.
   1. Vinyl composite tile flooring.
B. Resilient base.
   1. Resilient rubber wall base.
C. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.
B. Section 090561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

1.03 REFERENCE STANDARDS

A. ASTM D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine; 2017.
B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2023.
C. ASTM E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials; 2021a, with Editorial Revision.
D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.
E. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile; 2023.
F. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021.
G. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.
H. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.
I. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2023.

1.04 SUBMITTALS

A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

B. Shop Drawings: Show layout of special tile, sheet, special patterns, logos, details and color coding for verification of correct color and pattern locations coordinated with layout on Architectural drawings. Show locations of seams, expansion joints, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.

D. Verification Samples: Submit two samples, 6 by 9 inch in size illustrating color and pattern for each resilient flooring product specified.

E. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

F. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

I. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016000 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 1 box for each 50 boxes of each type and color.
   3. Extra Wall Base: 10 linear feet for each 500 linear feet of each type and color.
   4. Extra Stair Materials: Quantity equivalent to 5 percent of each type and color.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

C. Source Limitations: Obtain each type, color, and pattern of each type of resilient flooring product specified from one source for each resilient floor covering product with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

D. Fire Test Performance: Provide resilient flooring products and accessories that comply with the following fire performance characteristics as determined by testing products per ASTM test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Critical Radiant Flux: Class I, Not less than 0.45 watts per sq. cm when tested in conformance with ASTM E648 or NFPA 253.
   2. Smoke Density: Less than 450 in conformance with ASTM E662.
   3. Static Coefficient of Friction: Greater than 0.6 for level surfaces and greater than 0.8 for ramped surfaces in accordance with ASTM D2047.

E. Testing Agency Qualifications: Independent firm specializing in performing concrete slab moisture testing and inspections of the type specified in this section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.

B. Store all materials off of the floor in an acclimatized, weather-tight space.

C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

D. Protect roll materials from damage by storing on end.

E. Do not double stack pallets.

1.07 FIELD CONDITIONS

A. Maintain temperature of not less than 70 deg F (21 deg C) or more than 95 deg F (35 deg C) in spaces to receive resilient flooring products for at least 72 hours prior to installation, during installation, and for not less than 72 hours after installation. Subsequently, maintain a temperature of not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C) in areas where work is completed.

B. Do not install resilient flooring materials and accessories until they are at the same temperature as the space where they are to be installed.

C. Maintain relative humidity in spaces to receive resilient flooring products and accessories before, during, and after installation within the range recommended in writing by manufacturer.

D. Close spaces to traffic during flooring installation and for time period after installation recommended in writing by manufacturer.

E. Install resilient flooring and accessories after other finishing operations, including painting and ceiling operations, have been completed. Moisture content of concrete slabs and environmental conditions must be within limits recommended by manufacturer of products being installed for sufficient bonding with adhesives as determined by moisture tests.

PART 2 PRODUCTS

2.01 MATERIALS

A. Designs, Logos, Features, Colors and Patterns: Multiple colors for patterns, logos, features, borders, fields, and designs shall be selected by Architect from manufacturer's full range of colors.

2.02 TILE FLOORING

A. Vinyl Composition Tile: Homogeneous, with color extending throughout thickness.
   1. Manufacturers:
      a. Armstrong Flooring; Basis of Design
      b. Johnsonite, a Tarkett Company

c. Or Approved Equal.
d. Substitutions: See Section 016000 - Product Requirements.

2. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
3. Tiles shall have a minimum static coefficient of friction greater than 0.6 for level surfaces, greater than 0.8 for dry ramped surfaces.
4. Size: 12 by 12 inch.
5. Thickness: 0.125 inch.
6. Style: As indicated on drawings.
7. Color: As indicated on drawings.
8. Pattern: As indicated on drawings.
9. Dimensions: As indicated on drawings.
10. Color: To be selected by Architect from manufacturer's full range.

2.03 RESILIENT BASE

A. Resilient Base - FS SS-W-40a, Type I (rubber), Style B (with a cove toe, for use with hard surface flooring); ASTM F1861.
   1. Manufacturers:
      a. Roppe Corporation; Basis of Design
      b. Johnsonite, a Tarkett Company
      c. Or Approved Equal.
      d. Substitutions: See Section 016000 - Product Requirements.
   2. Height: 4 inches.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.
   5. Length: Roll.
   6. Color: To be selected by Architect from manufacturer's full range.
   7. Accessories: Premolded external corners and internal corners.

2.04 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.

C. Resilient Edge Strips: Homogenous vinyl or rubber composition; 1/8" thick; not less than 1" wide; tapered or bullnose edge as selected by the Architect.

D. Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edge of tiles, and in maximum available lengths to minimize running joints.

E. Epoxy Caulking Compound: Water-resistant type two-component epoxy caulking compound by the tread manufacturer to suite resilient flooring products and substrate conditions.

F. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
      b. Internal Relative Humidity: ASTM F2170.
      c. Moisture Vapor Emission: ASTM F1869.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
   3. Follow moisture and alkalinity remediation procedures in Section 090561.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare floor substrates for installation of flooring in accordance with Section 090561.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Scribe, cut, and fit flooring to but neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

D. Extend flooring into toe spaces, door reveals, closets, and similar openings.

E. Maintain reference markers, holes and openings that are in place or marked for future cutting by repeating of finish flooring as marled on the subfloor.

F. Install flooring on covers for telephone and electrical ducts and similar items in finished floor areas. Maintain overall continuity of color and pattern with flooring cut, scribed and installed on covers. Tightly adhere edges to perimeter of substrate around covers and to covers.

G. Adhere floor coverings to substrates using a full spread of adhesives applied to substrate to comply with adhesive and floor covering manufacturer’s written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.

H. Provide complete installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

I. Roll floor coverings according to floor covering manufacturer’s written instructions.

J. Heat-Welded Seams: Rout joints and heat with welding bead, permanently fusing sections into a seamless floor covering. Prepare, weld, and finish seams according to manufacturer's written instructions to produce surfaces flush with adjoining floor covering surfaces.

K. Adhesive-Applied Installation:
   1. Spread only enough adhesive to permit installation of materials before initial set.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay flooring from center marks established with principal walls or center aisles, discounting minor offsets, so that tile at opposite edges of areas are of equal width. Adjust as necessary to avoid use of cut width less than 1/2 tile at room perimeters. Lay flooring square to room axis, unless otherwise shown.

C. Match floor tiles for color and pattern by using tile from cartons of the same batch and mixing tiles as recommended in writing by the manufacturer. Cut tile neatly around all fixtures. Broken, cracked, chipped or deformed tiles are not acceptable.

D. Lay flooring with grain running in one direction unless directed otherwise.

E. Lay flooring in pattern layout design with respect to location of colors, patterns, borders, fields and design layout, and sizes as provided by time of submittal review by Architect.

F. Place flooring with adhesive cement in strict conformance with manufacturer's recommendations. Place epoxy caulking compound in the nose of all treads in accordance with tread manufacturer's recommendations. Scribe, cut and fit flooring materials as required. Butt tightly to vertical surfaces, thresholds, nosing and edgings. Extend flooring into toe spaces, door reveals and into closets and similar openings. Make joints even, straight and as inconspicuous as possible and laid tight. The entire surface shall be smooth, straight, and free from buckles, waves and projecting edges.

G. Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

H. Maintain reference markers, holes or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

I. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.

J. Use full spread of adhesive applied to substrate in accordance with tile manufacturer's directions including those for trowel notching, adhesive mixing, and adhesive open and working times.

K. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
C. Install base on solid backing. Bond tightly to wall and floor surfaces.
D. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.
B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION 096500

SECTION 099000 - PAINTING AND COATING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.
B. Interior painting and coating systems.
C. Exterior painting and coating systems.
D. Scope:
    1. Finish surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
        a. Exterior:
            1) Masonry: Concrete masonry units or concrete brick.
            2) Metal: Aluminum, galvanized.
            3) Metal, Miscellaneous: Iron, ornamental iron, structural iron and steel, and other ferrous metal.
        b. Interior:
            1) Concrete Masonry Units: Concrete, split face, scored, smooth, high density, low density, and fluted.
            2) Metal: Aluminum and galvanized.
            3) Metal, Galvanized: Ceilings and ductwork.
            4) Metal: Structural steel columns, joists, trusses, beams, miscellaneous and ornamental iron, structural iron, and other ferrous metal.
            5) Drywall: Walls, ceilings, gypsum board, and similar items.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).
B. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

1.04 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:
    1. Product characteristics.
    2. Surface preparation instructions and recommendations.
    3. Primer requirements and finish specification.
    4. Storage and handling requirements and recommendations.
    5. Application methods.
    6. Clean-up information.

B. Samples: Submit four paper draw down samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.

C. Maintenance Data: Submit coating maintenance manual including finish schedule showing where each product/color/finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016000 - Product Requirements for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
   3. Label each container with color in addition to manufacturer's label.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience and approved by manufacturer.

1.06 MOCK-UPS

A. See Section 014000 - Quality Requirements for general requirements for mock-ups.

B. Provide one accent wall as directed by Architect to demonstrate color and finish.

C. Provide door and frame assembly indicating paint color, texture, and finish.

D. Locate where directed by Architect.

E. Mock-up may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, product name, product code, color designation, VOC content, batch date, environmental handling, surface preparation, application, and use instructions.

C. Paint Materials: Store at a minimum of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when environmental conditions are outside the ranges required by manufacturer.

B. Follow manufacturer's recommended procedures for producing the best results, including testing substrates, moisture in substrates, and humidity and temperature limitations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
   1. The Sherwin Williams Company (Basis of Design)
   2. Benjamin Moore
   3. PPG
   4. Or approved equal.

B. Comparable Products: Products of approved manufacturers will be considered in accordance with 016000 - Product Requirements, and the following:

2.02 PAINTINGS AND COATINGS

A. General:
   1. Provide factory-mixed coatings unless otherwise indicated.
   2. Do not reduce, thin, or dilute coatings or add materials to coatings unless specifically indicated in manufacturer's instructions.

B. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

2.03 PAINT SYSTEMS - EXTERIOR

A. Masonry: Concrete masonry units (CMU), cinder or concrete block.
   1. Latex Systems:
      a. Semi-Gloss Finish:
         1) 1st Coat: Sherwin-Williams PrepRite Block Filler, B25W25 or approved equal.
         2) 2nd and 3rd Coat: Sherwin-Williams A-100 Exterior Latex Gloss, A8 Series, or approved equal.

B. Metal: Aluminum, galvanized.
   1. Latex Systems:
      a. Semi-Gloss Finish:
         1) 1st and 2nd Coats: Sherwin-Williams Pro Industrial Acrylic Gloss, B66-600 Series or approved equal.
            (a) 2 to 4 mils dry per coat.

C. Metal, Miscellaneous: Iron, ornamental iron, structural iron and steel, ferrous metal.
   1. Latex Systems:
      a. Eggshell Finish:
         1) 1st Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series or approved equal.
            (a) 5 to 10 mils wet, 1.8 to 3.6 mils dry per coat.
         2) 2nd and 3rd Coats: Sherwin-Williams Pro Industrial Acrylic Gloss, B66-600 Series or approved equal.
            (a) 2 to 4 mils dry per coat.

2.04 PAINT SYSTEMS - INTERIOR

A. Masonry CMU: Concrete, split face, scored, smooth, high density, low density, and fluted.
   1. Latex Systems:
      a. Eggshell Finish High Performance (HP):
         1) 1st Coat: Sherwin-Williams PrepRite Block Filler, B25W25 or approved equal.
            (a) 75 to 125 sq ft/gal.
         2) 2nd and 3rd Coat: Sherwin-Williams ProMar 200 HP Zero VOC Latex Semi-Gloss, B31-1950 Series or approved equal.
            (a) 4 mils wet, 1.6 mils dry per coat.

B. Metal: Aluminum and galvanized.
   1. Latex Systems:
      a. Semi-Gloss Finish:
         1) 1st Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series or approved equal.
            (a) 5 mils wet, 2 mils dry per coat.
         2) 2nd and 3rd Coat: Sherwin-Williams Pro Industrial Acrylic Gloss, B66-600 Series or approved equal.
            (a) 2 to 4 mils dry per coat.

C. Metal, Galvanized: Ceilings and ductwork.
   1. Multi-Surface Acrylic Coating System:
      a. Semi-Gloss Finish High Performance:
         1) 1st and 2nd Coat: Sherwin-Williams Pro Industrial Multi-Surface Acrylic, B66-1500 Series or approved equal.

D. Metal: Structural steel columns, joists, trusses, beams, miscellaneous and ornamental iron, structural iron, and ferrous metal.
   1. Latex Systems:
      a. Semi-Gloss Finish:
         1) 1st Coat: Sherwin-Williams Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series or approved equal.
         2) 2nd and 3rd Coats: Sherwin-Williams Pro Industrial Acrylic Gloss, B66-600 Series or approved equal.
            (a) 2 to 4 mils dry per coat.

E. Drywall: Walls, ceilings, gypsum board, and similar items.
   1. Latex Systems:
      a. Eggshell Finish High Performance (HP):
         1) 1st Coat: Sherwin-Williams ProMar 200 Zero VOC Interior Latex Primer, B28W2600 or approved equal.
            (a) 4 mils wet, 1.5 mils dry per coat.
         2) 2nd and 3rd Coat: Sherwin-Williams ProMar 200 HP Zero VOC Latex Semi-Gloss, B31-1950 Series or approved equal.
            (a) 4 mils wet, 1.6 mils dry per coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk.

D. Masonry: Remove efflorescence and chalk.

E. Gypsum Board: Fill minor defects with filler compound; sand smooth and remove dust prior to painting.

F. Aluminum: Remove surface contamination and oil; wash with solvent according to SSPC-SP 1.

G. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

H. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using methods recommended by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions.

C. Apply coatings at spread rate required to achieve manufacturer's recommended dry film thickness.

3.04 PRIMING

A. Apply primer to all surfaces unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

B. Primers specified in painting schedules may be omitted on items factory primed or factory finished items if acceptable to top coat manufacturers.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 099000

SECTION 123216 - MANUFACTURED PLASTIC-LAMINATE-CLAD CASEWORK

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.

B. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

C. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

D. AWI/AWMAC/WI - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

E. BHMA A156.9 - Cabinet Hardware; 2020.

F. BHMA A156.11 - American National Standard for Cabinet Locks; 2019.

G. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

H. ISO 4586-3 - High-Pressure Decorative Laminates (HPL, HPDL) – Sheets Based on Thermosetting Resins (Usually Called Laminates) – Part 3: Classification and Specifications for Laminates Less than 2 mm Thick and Intended for Bonding to Supporting Substrates; 2018.

I. PS 1 - Structural Plywood; 2023.

1.02 SUMMARY

A. Section Includes:
   1. Plastic-laminate-clad casework.
   2. Hardware and accessories.

B. Related Requirements:
   1. Section 061000 "Rough Carpentry" for wood blocking for anchoring casework.
   2. Section 096513 "Resilient Base and Accessories" for resilient base applied to plastic-laminate-clad casework.

1.03 DEFINITIONS

A. Definitions in the AWI/AWMAC/WI's "Architectural Woodwork Standards" apply to the Work of this Section.

1.04 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.05 ACTION SUBMITTALS

A. Product Data:
   1. Plastic-laminate-clad casework.
   2. Hardware and accessories.

B. Shop Drawings: For plastic-laminate-clad casework.
   1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
   2. Indicate types and sizes of casework.
   3. Indicate manufacturer's catalog numbers for casework.
   4. Show fabrication details, including types and locations of hardware.
   5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and equipment.

C. Keying Schedule: Include schematic keying diagram, and index each key set to unique designations that are coordinated with the Contract Documents.

D. Samples: For casework and hardware finishes.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For casework manufacturer and Installer.

B. Sample Warranty: For special warranty.

C. Field quality-control reports.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.09 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during remainder of construction period.

B. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

C. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

D. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Delamination of components or other failures of glue bond.
      b. Warping of components.
      c. Failure of operating hardware.
   2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS FOR CASEWORK

A. Quality Standard: Unless otherwise indicated, comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.
   1. Grade: Premium.

B. Product Designations:
   1. Drawings indicate sizes, configurations, and finish materials of manufactured plastic-laminate-clad casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 016000 "Product Requirements."

2.02 PLASTIC-LAMINATE-CLAD CASEWORK

A. Manufacturers - Metal Framing, Connectors, and Accessories: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following, or approved equal.
   1. TMI Systems (Basis of Design)
   2. Case Systems
   3. Stevens Industries Inc.
   4. Or approved equal.
   5. Substitutions: See Section 016000-Product Requirements.

B. Source Limitations: Obtain from single source from single manufacturer.

C. Design: Frameless cabinet construction with the following door and drawer-front style:
   1. Flush overlay.

D. Grain Direction for Wood-Grain Plastic Laminate:
   1. Doors: Vertical with continuous vertical matching.
   2. Drawer Fronts: Vertical with continuous vertical matching.
   3. Face Frame Members: Lengthwise.
   4. End Panels: Vertical.

5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.
7. Aprons: Horizontal.

E. Exposed Materials:
1. Plastic-Laminate Grade: VGS.
a. Colors and Patterns: As selected by Architect from manufacturer's full range.
2. Edgebanding: PVC.
a. PVC Edgebanding Color: As selected by Architect from casework manufacturer's full range.

F. Semiexposed Materials:
1. Thermally Fused Laminate (TFL) Panels: Provide thermally fused laminate panels for semiexposed surfaces unless otherwise indicated.
a. Colors and Patterns: As selected by Architect from manufacturer's full range.
b. Provide plastic laminate of same grade as exposed surfaces for interior faces of doors and drawer fronts and other locations where opposite side of component is exposed.
2. Unless otherwise indicated, provide specified edgebanding on all semiexposed edges.

G. Concealed Materials:
1. Solid Wood: With no defects affecting strength or utility.
2. Plywood: Hardwood plywood.
3. Plastic Laminate: Grade VGS.
4. Particleboard.
5. MDF.

2.03 HARDWARE AND ACCESSORIES

A. Hardware: Unless otherwise indicated, provide manufacturer's standard powder-coated, commercial-quality, heavy-duty hardware.
1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard except where hardware is through-bolted from back side.

B. Butt Hinges: Powder-coated, semiconcealed, five-knuckle hinges complying with ANSI/BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide two hinges for doors less than 48 inches high, and provide three hinges for doors more than 48 inches high.

C. Bar Pulls: Solid bar pulls, fastened from back with two screws.
1. For sliding doors, provide recessed flush pulls.
2. Provide two pulls for drawers more than 24 inches wide.
3. Style: as indicated on the drawings.

D. Semirecessed Pulls: Plastic. For sliding doors, provide recessed plastic flush-pulls. Provide two pulls for drawers more than 24 inches wide.

E. Door Catches: dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches high.

F. Door and Drawer Bumpers: Self-adhering, clear silicone rubber.
1. Doors: Provide one bumper at top and bottom of closing edge of each swinging door.

2. Drawers: Provide one bumper on back side of drawer front at each corner.

G. Drawer Slides: ANSI/BHMA A156.9.
   1. Manufacturer's standard.
   2. Heavy Duty (Grade 1HD-100): Undermount.
      a. Type: Full extension.
      b. Material: Epoxy-coated polymer slides.
      c. Motion Feature: Soft close dampener and Self-closing mechanism.
   3. General-purpose drawers; provide 100 lb load capacity.
   4. File drawers; provide 150 lb load capacity.

H. Label Holders: Stainless steel or chrome plated, sized to receive standard label cards approximately 1 by 2 inches, and attached with screws or brads.
   1. Provide label holders where indicated.

I. Drawer and Hinged-Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with ANSI/BHMA A156.11, Grade 1.
   1. Provide a minimum of two keys per lock and six master keys.
   2. Elbow catch or chain bolt used to secure inactive door on all locked cabinets.
   3. Provide locks on every door and drawer.
      a. Master key for up to 500 key changes.

J. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door unit.
   1. Mortise-type, powder-coated steel standards and shelf rests complying with ANSI/BHMA A156.9, Type B04071 and Type B04091.

2.04 MATERIALS

A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

C. Softwood Plywood: DOC PS 1.

D. Particleboard: ANSI A208.1, Grade M-2.

E. MDF: Medium-density fiberboard, ANSI A208.2, Grade 130.

F. Plastic Laminate: High-pressure decorative laminate complying with ISO 4586-3.

G. PVC Edgebanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 0.12 inch thick at doors and drawer fronts, 0.04 inch thick elsewhere.

H. Thermally Fused Laminate Panels: Particleboard or MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of ISO 4586.
   1. Edgebanding for Thermally Fused Laminate (TFL) Panels: PVC or polyester edgebanding matching thermally fused laminate panels.

2.05 FABRICATION

A. Plastic-Laminate-Clad Cabinet Construction: As required by referenced quality standard, but not less than the following:

1. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch particleboard.
2. Shelves: 1-inch- thick particleboard.
3. Backs of Casework: 1/2-inch- thick particleboard or MDF where exposed, 1/4-inch- thick, veneer-core hardwood plywood or MDF dadoed into sides, bottoms, and tops where not exposed.
4. Drawer Fronts: 3/4-inch particleboard.
5. Drawer Sides and Backs: 1/2-inch-thick particleboard or MDF, with glued dovetail or multiple-dowel joints.
6. Drawer Bottoms: 1/2-inch-thick particleboard or MDF glued and dadoed into front, back, and sides of drawers.
7. Cabinet Doors: 3/4 inch thick, with particleboard or MDF cores and solid-wood stiles and rails.
8. Stiles and Rails of Glazed Doors: 3/4 inch thick, with particleboard cores.

B. Filler Strips: Provide as needed to close spaces between casework and walls, ceilings, and equipment. Fabricate from same material and with same finish as casework.

C. Ledgetops: 1-inch thick particleboard or MDF.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Grade: Install casework to comply with same quality standard grade as item to be installed.

B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors to a tolerance of 1/16 inch.

E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."

F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

G. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.03 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 123216

SECTION 123600 - COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

A. Section 064116 - Manufactured Plastic-Laminate-Clad Casework

1.03 REFERENCE STANDARDS

A. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

E. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

F. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

G. PS 1 - Structural Plywood; 2023.

1.04 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

B. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.

C. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

G. Installation Instructions: Manufacturer's installation instructions and recommendations.

H. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

A. Quality Certification:
   1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   2. Provide designated labels on shop drawings as required by certification program.
   3. Provide designated labels on installed products as required by certification program.
   4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/2 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Manufacturers:
         1) American Bath Group
         2) Avonite Surfaces
         3) Dupont
         4) Formica Corporation

5) LG Hausys America, Inc
6) Meganite, Inc
7) Relang International, LLC
8) Wilsonart
9) Or Approved Equal.
10) Substitutions: See Section 016000 - Product Requirements.

b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
d. Color and Pattern: As selected by Architect from manufacturer's full line.

3. Other Components Thickness: 1/2 inch, minimum.
4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; eased edge.
5. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
6. Skirts: As indicated on drawings.
7. Fabricate in accordance with manufacturer's standard requirements.

2.02 MATERIALS

A. Extruded Aluminum: ASTM B211/B211M, 6463 alloy, T5 temper.

B. Wood-Based Components:
1. Wood fabricated from old growth timber is not permitted.

C. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

D. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

E. Cove Molding for Top of Splashes: Rubber with semi-gloss finish and T-spline to fit between splash and wall; 1/2 inch by 1/2 inch.
1. Color: As selected by Architect from manufacturer's full line.

F. Joint Sealant: Mildew-resistant silicone sealant, color as selected by architect from manufacturer's full line.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
1. Join lengths of tops using best method recommended by manufacturer.
2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
a. Rout a 1/8 inch drip groove at underside of exposed overlapping edges, set back 1/2 inch from face of edge.
3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.

1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
2. Height: 4 inches, unless otherwise indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.
   1. Where indicated use rubber cove molding.
   2. Where applied cove molding is not indicated use specified sealant.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION 123600

SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe sleeves.
B. Pipe-sleeve seals.

1.02 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.

1.03 REFERENCE STANDARDS

A. ASTM C592 - Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type); 2024.
B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

PART 2 PRODUCTS

2.01 PIPE SLEEVES

A. Manufacturers:
   1. Flexicraft Industries
   2. Or Approved Equal.
B. Plastic or Sheet Metal: Pipe passing through interior walls, partitions, and floors, unless steel or brass sleeves are specified below.
C. Pipe Passing Through Below Grade Exterior Walls:
   1. Zinc coated or cast iron pipe.
   2. Provide watertight space with link rubber or modular seal between sleeve and pipe on both pipe ends.
D. Clearances:
   1. Provide allowance for insulated piping.

2. Wall, Floor, Partitions, and Beam Flanges: 1 inch greater than external pipe diameter.
3. All Rated Openings: Caulked tight with fire stopping material in compliance with ASTM E814 in accordance with Section 078400 to prevent the spread of fire, smoke, and gases.

2.02 PIPE-SLEEVE SEALS

A. Manufacturers:
   1. Advance Products & Systems, LLC
   2. American Polywater Corporation
   3. Flexicraft Industries
   4. Or Approved Equal.

B. Modular Mechanical Sleeve-Seal:
   1. Elastomer-based interlocking links continuously fill annular space between pipe and wall-sleeve, wall or casing opening.
   2. Watertight seal between pipe and wall-sleeve, wall or casing opening.
   3. Size and select seal component materials in accordance with service requirements.
   4. Glass-reinforced plastic pressure end plates.

PART 3 EXECUTION

3.01 INSTALLATION

A. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.

B. Install piping to conserve building space, to not interfere with use of space and other work.

C. Install piping and pipe sleeves to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

D. Provide sleeves when penetrating footings, floors, walls, partitions, and _____. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.

E. Manufactured Sleeve-Seal Systems:
   1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.
   2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.
   3. Locate piping in center of sleeve or penetration.
   4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.
   5. Tighten bolting for a water-tight seal.
   6. Install in accordance with manufacturer's recommendations.

F. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

END OF SECTION 230517

SECTION 230519 - METERS AND GAUGES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pressure gauges and pressure gauge taps.
B. Thermometers and thermometer wells.

1.02 REFERENCE STANDARDS

A. ASME B40.100 - Pressure Gauges and Gauge Attachments; 2022.
B. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers; 2014 (Reapproved 2025).
C. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers; 2014 (Reapproved 2021).
D. AWWA M6 - Water Meters -- Selection, Installation, Testing, and Maintenance; 2012, with Addendum (2018).
E. UL 393 - Indicating Pressure Gauges for Fire-Protection Service; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.

PART 2 PRODUCTS

2.01 PRESSURE GAUGES

A. Manufacturers:
   1. Dwyer Instruments, Inc
   2. Moeller Instrument Company, Inc
   3. Omega Engineering, Inc
   4. Winters Instruments
   5. Or Approved Equal.
B. Pressure Gauges: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.
   1. Case: Steel with brass bourdon tube.
   2. Size: 4-1/2 inch diameter.

3. Mid-Scale Accuracy: One percent.

2.02 PRESSURE GAUGE TAPPINGS

A. Gauge Cock: Tee or lever handle, brass for maximum 150 psi.

B. Needle Valve: Brass, 1/4 inch NPT for minimum 150 psi.

C. Syphon: Steel, Schedule 40, 1/4 inch angle or straight pattern.

2.03 STEM TYPE THERMOMETERS

A. Manufacturers:
   1. Dwyer Instruments, Inc
   2. Omega Engineering, Inc
   3. Weksler Glass Thermometer Corp
   4. Winters Instruments
   5. Or Approved Equal.

B. Thermometers - Fixed Mounting: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish.
   1. Size: 9 inch scale.
   2. Window: Clear Lexan.
   3. Accuracy: 2 percent, per ASTM E77.
   4. Calibration: Degrees F.

C. Thermometers - Adjustable Angle: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
   1. Size: 9 inch scale.
   2. Window: Clear Lexan.
   3. Stem: 3/4 inch NPT brass.
   4. Accuracy: 2 percent, per ASTM E77.
   5. Calibration: Degrees F.

2.04 THERMOMETER SUPPORTS

A. Socket: Brass separable sockets for thermometer stems with or without extensions as required, and with cap and chain.

2.05 TEST PLUGS

A. Manufacturers:
   1. Dwyer Instruments, Inc
   2. Watts Water Technologies, Inc
   3. Weiss Instruments, LLC
   4. Weksler Glass Thermometer Corp
   5. Winters Instruments
   6. Or Approved Equal.

B. Test Plug: 1/4 inch or 1/2 inch brass fitting and cap for receiving 1/8 inch outside diameter pressure or temperature probe with neoprene core for temperatures up to 200 degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install positive displacement meters with isolating valves on inlet and outlet to AWWA M6. Provide full line size valved bypass with globe valve for liquid service meters.

C. Provide one pressure gauge per pump, installing taps before strainers and on suction and discharge of pump. Pipe to gauge.

D. Install thermometer sockets adjacent to controls system thermostat, transmitter, or sensor sockets. Refer to Section 230943. Where thermometers are provided on local panels, duct or pipe mounted thermometers are not required.

E. Locate duct mounted thermometers minimum 10 feet downstream of mixing dampers, coils, or other devices causing air turbulence.

F. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

G. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.

H. Locate test plugs adjacent thermometers and thermometer sockets.

END OF SECTION 230519

SECTION 230523 - GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ball valves.
B. Check valves.
C. Plug valves.

1.02 REFERENCE STANDARDS

A. API STD 594 - Check Valves: Flanged, Lug, Wafer, and Butt-Welding; 2022.
B. ASME B1.20.1 - Pipe Threads, General Purpose, Inch; 2013 (Reaffirmed 2018).
C. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch Standard; 2025.
D. ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves; 2022, with Errata (2023).
E. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
F. ASME B16.34 - Valves — Flanged, Threaded, and Welding End; 2025.
G. ASME B31.9 - Building Services Piping; 2025.
H. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.
I. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings; 2004 (Reapproved 2023).
J. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017.
K. MSS SP-45 - Drain and Bypass Connections; 2020.
L. MSS SP-78 - Gray Iron Plug Valves, Flanged and Threaded Ends; 2011.
M. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves; 2019.
N. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listings.

E. Maintenance Materials: Furnish Owner with one wrench for every five plug valves, in each size of square plug valve head.
   1. See Section 016000 - Product Requirements for additional provisions.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).

B. Provide the following valves for the applications if not indicated on drawings:
   1. Isolation (Shutoff): Butterfly, Gate, Ball, and Plug.

C. Substitutions of valves with higher CWP classes or WSP ratings for same valve types are permitted when specified CWP ratings or WSP classes are not available.

2.02 GENERAL REQUIREMENTS

A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.

B. Valve Sizes: Match upstream piping unless otherwise indicated.

C. Valve Actuator Types:
   1. Hand Lever: Quarter-turn valves 6 inch and smaller.
   2. Wrench: Plug valves with square heads.

D. Valves in Insulated Piping: Provide 2 inch stem extensions and the following features:
   1. Ball Valves: Extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

E. Valve-End Connections:
   1. Threaded End Valves: ASME B1.20.1.
   2. Pipe Flanges and Flanged Fittings 1/2 inch through 24 inch: ASME B16.5.
   3. Solder Joint Connections: ASME B16.18.

F. General ASME Compliance:
   1. Ferrous Valve Dimensions and Design Criteria: ASME B16.10 and ASME B16.34.
   2. Building Services Piping Valves: ASME B31.9.

G. Bronze Valves:
   1. Fabricate from dezincification resistant material.
   2. Copper alloys containing more than 15 percent zinc are not permitted.

H. Valve Bypass and Drain Connections: MSS SP-45.

2.03 BRASS, BALL VALVES

A. One Piece, Full Port with Brass Trim and Push-to-fit or Threaded Connections:
   1. Comply with MSS SP-110.

2. CWP Rating: 200 psi.
3. Body: Forged brass.
4. Ends: Threaded.
5. Seats: PTFE or TFE.
6. Stem: Brass.
7. Ball: Chrome-plated brass.

2.04 BRONZE, BALL VALVES

A. General:
   1. Fabricate from dezincification resistant material.
   2. Copper alloys containing more than 15 percent zinc are not permitted.
B. One Piece, Reduced Port with Bronze Trim:
   1. Comply with MSS SP-110.
   2. CWP Rating: 400 psi.
   3. Ends: Threaded.
   4. Seats: PTFE.

2.05 BRASS, INLINE CHECK VALVES

A. Class 150: CWP Rating: 200 psi .
B. Maximum Service Temperature: 250 degreess F.
C. Body: Forged brass.
D. Disc: Forged brass.
E. Seal: PTFE, bubble tight.
F. End-Connections: Press.

2.06 BRASS, HORIZONTAL SWING CHECK VALVES

A. Threaded End-Connections:
   1. Class 125: CWP Rating: 200 psi.
   2. Body: Forged brass.
   3. Disc: Forged brass.
   4. Hinge-Pin, Screw, and Cap: Forged brass.
B. Press End-Connections:
   1. Class 125: WOG Rating: 200 psi.
   2. Body: Forged brass.
   3. Disc: Forged brass.
   4. Hinge-Pin, Screw, and Cap: Forged brass.

2.07 BRONZE, SWING CHECK VALVES

A. Class 125:
   1. Pressure and Temperature Rating: MSS SP-80, Type 3.
   2. Design: Y-pattern, horizontal or vertical flow.
   3. WSP Rating: 200 psi.

4. Body: Bronze, ASTM B62.
5. End Connections: Threaded or soldered.
6. Disc: Bronze.

2.08 LUBRICATED PLUG VALVES

A. Regular Gland and Cylindrical with Threaded Ends:
   1. Comply with MSS SP-78, Type II.
   2. Class 150:
      a. Sizes 2-1/2 to 12 inch , CWP Rating; 200 psi.
      b. Sizes 14 to 24 inch, CWP Rating; 150 psi.
   3. Body Material: Cast iron with lubrication sealing system.
   4. Pattern: Regular or short.
   5. Plug: Cast iron or bronze with sealant groove.

PART 3 EXECUTION

3.01 EXAMINATION

A. Discard all packing materials and verify that valve interior, including threads and flanges, are completely clean without signs of damage or degradation that could result in leakage.

B. Verify valve parts to be fully operational in all positions from closed to fully open.

C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.

D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.

B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

END OF SECTION 230523

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment components.

1.02 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping; 2023.

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

E. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2022).

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.

G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2022).

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

J. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

L. FM (AG) - FM Approval Guide; Current Edition.

M. MFMA-4 - Metal Framing Standards Publication; 2004.

N. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

O. UL (DIR) - Online Certifications Directory; Current Edition.

P. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 033000.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

1.05 QUALITY ASSURANCE

A. Comply with applicable building code.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
   2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
   3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of _____. Include consideration for vibration, equipment operation, and shock loads where applicable.
   4. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.

5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
    a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
    b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Prefabricated Trapeze-Framed Metal Strut Systems:
1. Manufacturers:
    a. ABB Installation Products
    b. B-Line, a brand of Eaton Corporation
    c. Unistrut, a brand of Atkore International Inc
    d. Or Approved Equal.
2. MFMA-4 compliant, pre-fabricated, MSS SP-58 type 59 continuous-slot metal strut channel with associated tracks, fittings, and related accessories.
3. Strut Channel or Bracket Material:
    a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
4. Accessories: Provide bracket covers, cable basket clips, cable tray clips, clamps, conduit clamps, fire-retarding brackets, j-hooks, protectors, and vibration dampeners.

C. Strut Channels:
1. Manufacturers:
    a. B-Line, a brand of Eaton Corporation
    b. Gripple, Inc
    c. Unistrut, a brand of Atkore International Inc
    d. Or Approved Equal
2. ASTM A653/A653M galvanized steel bracket with clamps for surface mounting of piping or plumbing equipment support.
3. Channel or Bracket Kits: Include rods, brackets, end-fixed fittings, covers, clips, and other related hardware required to complete sectional trapeze section for piping or other support.

D. Hanger Rods:
1. Threaded zinc-plated steel unless otherwise indicated.
2. Minimum Size, Unless Otherwise Indicated or Required:
    a. Equipment Supports: 1/2 inch diameter.
    b. Piping up to 1 inch: 1/4 inch diameter.
    c. Piping larger than 1 inch: 3/8 inch diameter.
    d. Trapeze Support for Multiple Pipes: 3/8 inch diameter.

E. Pipe Supports:
1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
2. Liquid Temperatures Up To 122 degrees F:
    a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
    b. Support From Below: MSS SP-58 Types 35 through 38.

F. Pipe Stanchions:
1. Manufacturers:
    a. Anvil International

b. Or Approved Equal.

2. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
3. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
4. For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.

G. Beam Clamps:
1. Manufacturers:
a. FNW
b. Or Approved Equal.
2. MSS SP-58 types 19 through 23, 25 or 27 through 30 based on required load.
3. Beam C-Clamp: MSS SP-58 type 23, malleable iron and steel with plain, stainless steel, and zinc finish.
4. Small or Junior Beam Clamp: MSS SP-58 type 19, malleable iron with plain finish. For inverted usage provide manufacturer listed size(s).
5. Wide Mouth Beam Clamp: MSS SP-58 type 19, malleable iron with plain finish.
6. Centerload Beam Clamp with Extension Piece: MSS SP-58 type 30, malleable iron with plain finish.
7. FM (AG) and UL (DIR) Approved Beam Clamp: MSS SP-58 type 19, plain finish,
8. Provide clamps with hardened steel cup-point set screws and lock-nuts for anchoring in place.
9. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.

H. Riser Clamps:
1. Manufacturers:
a. FNW
b. Or Approved Equal.
2. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
3. MSS SP-58 type 1 or 8, carbon steel or steel with epoxy plated, plain, stainless steel, or zinc plated finish.
4. Medium Split Horizontal Pipe Clamp: MSS SP-58 type 4, carbon steel or stainless steel with epoxy plated, plain, stainless steel, or zinc plated finish.
5. Copper Tube Pipe Clamp: MSS SP-58 type 8, epoxy plated copper.
6. UL (DIR) listed: Pipe sizes 1/2 to 8 inch.

I. Pipe Hangers:
1. Split Ring Hangers:
a. Provide hinged split ring and yoke roller hanger with epoxy copper or plain finish.
b. Material: ASTM A47/A47M malleable iron or ASTM A36/A36M carbon steel.
c. Provide hanger rod and nuts of the same type and material for a given pipe run.
d. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
2. Clevis Hangers, Adjustable:
a. Manufacturers:
1) FNW

2) Eaton.
3) Or Approved Equal.

b. Copper Tube: MSS SP-58 Type 1, epoxy-plated copper.
c. Light-Duty: MSS SP-58 Type 1, zinc-colored, epoxy plated.
d. Standard-Duty: MSS SP-58 Type 1, zinc-colored, epoxy plated.

J. Pipe Shields for Insulated Piping:
1. Manufacturers:
a. Anvil International
b. FNW
c. Or Approved Equal.
2. MSS SP-58 Type 40, ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel
3. General Construction and Requirements:
a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
b. Shields Material: UV-resistant polypropylene with glass fill.
c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
d. Minimum Service Temperature: Minus 40 degrees F.
e. Maximum Service Temperature: 178 degrees F.
f. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.

K. Anchors and Fasteners:
1. Manufacturers - Mechanical Anchors:
a. FNW
b. Hilti, Inc
c. ITW Red Head, a division of Illinois Tool Works, Inc
d. Or Approved Equal.
2. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify that mounting surfaces are ready to receive support and attachment components.
C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.
B. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
C. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

D. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

E. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

F. Equipment Support and Attachment:
   1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
   2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

G. Secure fasteners according to manufacturer's recommended torque settings.

H. Remove temporary supports.

END OF SECTION 230529

SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.
B. Tags.
C. Adhesive-backed duct markers.
D. Pipe markers.
E. Ceiling tacks.

1.02 RELATED REQUIREMENTS

A. Section 099123 - Interior Painting: Identification painting.

1.03 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2020.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

A. Air Handling Units: Nameplates.
B. Air Terminal Units: Tags.
C. Control Panels: Nameplates.
D. Piping: Tags.
E. Thermostats: Nameplates.
F. Valves: Tags and ceiling tacks where located above lay-in ceiling.

2.02 NAMEPLATES

A. Manufacturers:
   1. Advanced Graphic Engraving, LLC
   2. Brimar Industries, Inc
   3. Craftmark Pipe Markers
   4. Seton Identification Products, a Tricor Direct Company
   5. Or Approved Equal.
B. Letter Color: White.
C. Letter Height: 1/4 inch.
D. Background Color: Black.

2.03 TAGS

A. Manufacturers:
   1. Advanced Graphic Engraving
   2. Brady Corporation
   3. Brimar Industries, Inc
   4. Craftmark Pipe Markers
   5. Seton Identification Products, a Tricor Company
   6. Or Approved Equal.
B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.
C. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

2.04 PIPE MARKERS

A. Manufacturers:
   1. Brady Corporation
   2. Brimar Industries, Inc
   3. Craftmark Pipe Markers
   4. Seton Identification Products, a Tricor Company
   5. Or Approved Equal.
B. Color: Comply with ASME A13.1.
C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.
E. Color code as follows:
   1. Heating, Cooling, and Boiler Feedwater: Green with white letters.
   2. Toxic and Corrosive Fluids: Orange with black letters.
   3. Compressed Air: Blue with white letters.

2.05 CEILING TACKS

A. Description: Steel with 3/4 inch diameter color coded head.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 099123 for stencil painting.

3.02 INSTALLATION

A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Install plastic pipe markers in accordance with manufacturer's instructions.

D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

E. Use tags on piping 3/4 inch diameter and smaller.
   1. Identify service, flow direction, and pressure.
   2. Install in clear view and align with axis of piping.
   3. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION 230553

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air systems.

B. Testing, adjustment, and balancing of hydronic, steam, and refrigerating systems.

1.02 RELATED REQUIREMENTS

A. Section 012100 - Allowances: Inspection and testing allowances.

B. Section 014000 - Quality Requirements: Employment of testing agency and payment for services.

C. Section 019113 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.

D. Section 230800 - Commissioning of HVAC.

E. Section 250500 - Common Work Results for Integrated Automation.

1.03 REFERENCE STANDARDS

A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.

B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2024, with Errata (2025).

C. NEBB (TAB) - Procedural Standard for Testing, Adjusting and Balancing of Environmental Systems; 2019, with Errata (2022).

D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2023.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.

1. Include at least the following in the plan:
    a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
    b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
    c. Discussion of what notations and markings will be made on the duct and piping drawings during the process.

d. Final test report forms to be used.
e. Procedures for formal deficiency reports, including scope, frequency and distribution.

C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
1. Revise TAB plan to reflect actual procedures and submit as part of final report.
2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
5. Units of Measure: Report data in both I-P (inch-pound) and SI (metric) units.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Perform total system balance in accordance with one of the following:
1. SMACNA (TAB).

B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.

C. TAB Agency Qualifications:
1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
2. Certified by one of the following:
a. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.

D. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

3.02 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
2. Temperature control systems are installed complete and operable.
3. Proper thermal overload protection is in place for electrical equipment.
4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Access doors are closed and duct end caps are in place.

8. Air outlets are installed and connected.
9. Duct system leakage is minimized.

B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

C. Beginning of work means acceptance of existing conditions.

3.03 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.

3.04 WATER SYSTEM PROCEDURE

END OF SECTION 230593

SECTION 230713 - DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.
B. Duct liner.
C. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

A. Section 230553 - Identification for HVAC Piping and Equipment.
B. Section 233100 - HVAC Ducts and Casings: Glass fiber ducts.

1.03 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.
B. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2023.
C. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013 (Reapproved 2019).
D. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014 (Reapproved 2019).
E. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation; 2020.
F. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material); 2019.
G. ASTM C1126 - Standard Specification for Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation; 2024.
H. ASTM C1290 - Standard Specification for Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts; 2016 (Reapproved 2021).
I. ASTM C1423 - Standard Guide for Selecting Jacketing Materials for Thermal Insulation; 2021.
J. ASTM C1775 - Standard Specification for Laminate Protective Jacket and Tape for Use Over Thermal Insulation for Outdoor Applications; 2022.
K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
L. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

M. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

N. SAE AMS3779 - Tape, Adhesive, Pressure-Sensitive Thermal Radiation Resistant, Aluminum Coated Glass Cloth; 2016b.

O. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

P. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

C. Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. CertainTeed Corporation
   2. Johns Manville
   3. JP Lamborn Co
   4. Knauf Insulation
   5. Owens Corning Corporation
   6. Or Approved Equal.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. K value: 0.36 at 75 degrees F, when tested in accordance with ASTM C518.
   2. Maximum Service Temperature: 1,200 degrees F.
   3. Maximum Water Vapor Absorption: 5.0 percent by weight.

C. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   3. Secure with pressure-sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure-sensitive rubber-based adhesive.

E. Indoor Vapor Barrier Mastic:

1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

2.03 GLASS FIBER, RIGID

A. Manufacturer:
   1. CertainTeed Corporation
   2. Johns Manville
   3. Knauf Insulation
   4. Owens Corning Corporation
   5. Or Approved Equal.

B. Insulation: ASTM C612; rigid, noncombustible blanket.
   1. K Value: 0.24 at 75 degrees F, when tested in accordance with ASTM C518.
   2. Maximum Service Temperature: 450 degrees F.
   3. Maximum Water Vapor Absorption: 5.0 percent.
   4. Maximum Density: 8.0 pcf.

C. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   3. Secure with pressure-sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure-sensitive rubber-based adhesive.

2.04 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturers:
   1. Aeroflex USA, Inc
   2. Armacell LLC
   3. K-Flex USA LLC
   4. Or Approved Equal.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
   1. Minimum Service Temperature: Minus 40 degrees F.
   2. Maximum Service Temperature: 180 degrees F.
   3. Connection: Waterproof vapor barrier adhesive.

2.05 JACKETING AND ACCESSORIES

A. Aluminum-Foil Laminate Jacket:
   1. Manufacturers:
      a. Ideal Tape Co., Inc
      b. Or Approved Equal.
   2. Factory-applied, pressure sensitive adhesive jacketing on paper release liner.
   3. Finish: Aluminum smooth.
   4. Comply with ASTM C1775.

B. Reinforced Tape:
   1. FSK tape suitable for sealing seams between insulation, insulated elbows, and fittings resulting in a tight, smooth surface without wrinkles.
   2. Comply with UL 723 or ASTM E84.
   3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.

2.06 DUCT LINER

A. Manufacturers:
   1. Aeroflex USA, Inc
   2. Armacell LLC
   3. CertainTeed Corporation
   4. Ductmate Industries, Inc, a DMI Company
   5. Johns Manville
   6. Owens Corning Corporation
   7. Or Approved Equal.

B. Note: Choose the liner type - Elastomeric Foam, Glass Fiber, or Phenolic Foam.

C. Elastomeric Foam Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
   1. Minimum Service Temperature: Minus 40 degrees F.
   2. Maximum Service Temperature: 180 degrees F.
   3. Fungal Resistance: No growth when tested according to ASTM G21.
   4. Apparent Thermal Conductivity: Maximum of 0.28 at 75 degrees F.
   5. Erosion Resistance: Does not show evidence of breaking away, flaking off, or delamination at velocities of 10,000 fpm when tested in accordance with ASTM C1071.
   6. Connection: Waterproof vapor barrier adhesive.

D. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation. Comply with ASTM C916.

E. Adhesive: Waterproof, fire-retardant type, ASTM C916.

F. Liner Fasteners: Galvanized steel, self-adhesive pad with integral head.

PART 3 EXECUTION

3.01 EXAMINATION

A. Test ductwork for design pressure prior to applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Insulated Ducts Conveying Air Below Ambient Temperature:
   1. Provide insulation with vapor barrier jackets.

2. Finish with tape and vapor barrier jacket.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

C. Insulated Ducts Conveying Air Above Ambient Temperature:
1. Provide with or without standard vapor barrier jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.

D. External Duct Insulation Application:
1. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
2. Secure insulation without vapor barrier with staples, tape, or wires.
3. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
4. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
5. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.

E. Duct and Plenum Liner Application:
1. Adhere insulation with adhesive for 90 percent coverage.
2. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
3. Seal and smooth joints. Seal and coat transverse joints.
4. Seal liner surface penetrations with adhesive.
5. Duct dimensions indicated are net inside dimensions required for airflow. Increase duct size to allow for insulation thickness.

END OF SECTION 230713

SECTION 230719 - HVAC PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping insulation.
B. Flexible removable and reusable blanket insulation.
C. Weather barrier coatings.
D. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

A. Section 016116 - Volatile Organic Compound (VOC) Content Restrictions.
B. Section 078400 - Firestopping.
C. Section 099123 - Interior Painting: Painting insulation jacket.
D. Section 232300 - Refrigerant Piping: Placement of inserts.

1.03 REFERENCE STANDARDS

A. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2023.
B. ASTM C585 - Standard Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing; 2022.
C. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation; 2022.
D. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation; 2023.
E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
F. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.
G. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturers:
   1. Aeroflex USA, Inc.
   2. Armacell LLC
   3. K-Flex USA LLC
   4. Or Approved Equal.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
   1. Minimum Service Temperature: Minus 40 degrees F.
   2. Maximum Service Temperature: 180 degrees F.
   3. Connection: Waterproof vapor barrier adhesive.

C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

D. Weather Barrier Coating: Air dried, contact adhesive, compatible with insulation and ASTM E84 compliant.

2.03 WEATHER BARRIER COATINGS

A. Weather-Resistive Barrier Coating: Fire-resistive, UV resistant, water-based mastic for use over closed cell polyethylene and polyurethane foam insulation; applied with glass fiber or synthetic reinforcing mesh.
   1. Manufacturers:
      a. H.B. Fuller Construction Products, Inc
      b. Or Approved Equal.
   2. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A, when tested in accordance with ASTM E84.
   3. Water Vapor Permeance: Greater than 1.0 perm in accordance with ASTM E96/E96M.

2.04 JACKETING AND ACCESSORIES

A. PVC Plastic.
   1. Manufacturers:
      a. Johns Manville Corporation
      b. Or Approved Equal.
   2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
      a. Minimum Service Temperature: 0 degrees F.
      b. Maximum Service Temperature: 150 degrees F.

c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
d. Thickness: 10 mil, 0.010 inch.
e. Connections: Brush on welding adhesive.

3. Covering Adhesive Mastic: Compatible with insulation.

B. Vapor Barrier Membranes: ASTM C1136, Type IX.
1. Multilayer Laminate Vapor Barrier:
a. Provide multilayer laminate with 1.0 mil, 0.001 inch foil, reversible.
b. Thickness: 2.4 mil, 0.002 inch.
c. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Test piping for design pressure, liquid tightness, and continuity prior to applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated Pipes Conveying Fluids Below Ambient Temperature:
1. Insulate entire system, including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

E. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, see Section 078400.

F. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with canvas jacket sized for finish painting.

G. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping. Provide two coats of UV resistant finish for flexible elastomeric cellular insulation without jacketing.

END OF SECTION 230719

SECTION 232113 - HYDRONIC PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hydronic system requirements.
B. Heating water piping, above grade.
C. Heating water and glycol piping, above grade.
D. Equipment drains and overflows.
E. Pipe hangers and supports.
F. Unions, flanges, mechanical couplings, and dielectric connections.
G. Valves:
    1. Ball valves.
    2. Check valves.
    3. Pressure independent temperature control valves and balancing valves.
H. Flow controls.

1.02 RELATED REQUIREMENTS

A. Section 232500 - HVAC Water Treatment: Pipe cleaning.

1.03 REFERENCE STANDARDS

A. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2021.
B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.
C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.
D. ASME B16.51 - Copper and Copper Alloy Press-Connect Pressure Fittings; 2021.
E. ASME B31.9 - Building Services Piping; 2025.
F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2022.
G. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2025.
H. ASTM B32 - Standard Specification for Solder Metal; 2020.
I. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.
J. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.
K. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120; 2021a.

L. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2025a.

M. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40; 2024.

N. ASTM D2467 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80; 2024.

O. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020 (Reapproved 2024).

P. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications; 2007 (Reapproved 2024).

Q. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2019.

R. AWS D10.12M/D10.12 - Guide for Welding Mild Steel Pipe; 2000.

S. AWWA C606 - Grooved and Shouldered Joints; 2022.

T. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Include data on pipe materials, pipe fittings, valves, and accessories.
   2. Provide manufacturers catalog information.
   3. Indicate valve data and ratings.

PART 2 PRODUCTS

2.01 HYDRONIC SYSTEM REQUIREMENTS

A. Comply with ASME B31.9 and applicable federal, state, and local regulations.

B. Piping: Provide piping, fittings, hangers, and supports as required, as indicated, and as follows:
   1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
   2. Use non-conducting dielectric connections whenever jointing dissimilar metals.
   3. Grooved mechanical joints may be used in accessible locations only.
      a. Accessible locations include those exposed on interior of building, in pipe chases, and in mechanical rooms, aboveground outdoors, and as approved by Architect.
      b. Use rigid joints unless otherwise indicated.
   4. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.

C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges, unions, or grooved couplings to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.

D. Valves: Provide valves where indicated:
   1. Provide drain valves where indicated, and if not indicated, provide at least at main shut-off, low points of piping, bases of vertical risers, and at equipment. Use 3/4 inch gate valves with cap; pipe to nearest floor drain.
   2. For throttling, bypass, or manual flow control services, use globe, ball, or butterfly valves.

2.02 HEATING WATER AND GLYCOL PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M, Schedule 40, black, using one of the following joint types:
   1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D10.12M/D10.12 welded.
   2. Threaded Joints: ASME B16.3, malleable iron fittings.

B. Copper Tube: ASTM B88 (ASTM B88M), Type K (A), drawn, using one of the following joint types:
   1. Solder Joints: ASME B16.18 cast brass/bronze or ASME B16.22 solder wrought copper fittings.
      a. Solder: ASTM B32 lead-free solder, HB alloy (95-5 tin-antimony) or tin and silver.
      b. Braze: AWS A5.8M/A5.8 BCuP copper/silver alloy.
   2. Mechanical Press Sealed Fittings: Double pressed type complying with ASME B16.51, utilizing EPDM, nontoxic synthetic rubber sealing elements.
      a. Manufacturers:
         1) Apollo Valves
         2) FNW
         3) Grinnell Products
         4) Or Approved Equal.

2.03 EQUIPMENT DRAINS AND OVERFLOWS

A. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26.
   1. Fittings: ASTM D2466 or D2467, PVC.
   2. Joints: Solvent welded in accordance with ASTM D2855.

2.04 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inches: Malleable iron, adjustable swivel, split ring.
   3. Hangers for Hot Pipe Sizes 2 to 4 Inches: Carbon steel, adjustable, clevis.

B. In grooved installations, use rigid couplings with offsetting angle-pattern bolt pads or with wedge-shaped grooves in header piping to permit support and hanging in accordance with ASME B31.9.

2.05 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS

A. Unions for Pipe of 2 Inches and Less:
   1. Ferrous Piping: 150 psi brass or malleable iron, threaded.
   2. Copper Pipe: Bronze, soldered joints.

B. Flanges for Pipe 2 Inches and Greater:
   1. Ferrous Piping: 150 psig forged steel, slip-on.
   2. Copper Piping: Bronze.
   3. Gaskets: 1/16 inch thick, preformed neoprene.

C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
   1. Dimensions and Testing: In accordance with AWWA C606.
   2. Mechanical Couplings: Comply with ASTM F1476.
   3. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
   4. When pipe is field grooved, provide coupling manufacturer's grooving tools.

2.06 BALL VALVES

A. Manufacturers:
   1. Anvil International
   2. Apollo Valves
   3. Grinnell Products; _____: www.grinnell.com/#sle.
   4. Or Approved Equal.

B. Up To and Including 2 Inches:
   1. Bronze one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle with balancing stops, solder ends with union.

C. Over 2 Inches:
   1. Ductile iron body, chrome plated stainless steel ball, teflon, Virgin TFE, or _____ seat and stuffing box seals, lever handle, gear operated, or _____, flanged ends, rated to 800 psi.

2.07 SWING CHECK VALVES

A. Manufacturers:
   1. Anvil International
   2. Apollo Valves
   3. Grinnell Products
   4. Or Approved Equal.

2.08 PRESSURE INDEPENDENT TEMPERATURE CONTROL VALVES AND BALANCING VALVES

A. Manufacturers:
   1. Danfoss
   2. Schneider Electric
   3. Or Approved Equal.

B. Control Valves: Factory-fabricated pressure independent with internal differential pressure regulator (DPRV), which automatically adjusts to normal changes in system pressure and provides 100 percent control valve authority at all positions of the valve.

2.09 FLOW CONTROLS

A. Manufacturers:
   1. Anvil International
   2. Bell & Gossett, a brand of Xylem, Inc
   3. Griswold Controls
   4. ITT Bell & Gossett
   5. Taco, Inc
   6. Or Approved Equal.

B. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, blowdown/backflush drain.

C. Calibration: Control flow within 10 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, minimum pressure 2 psi.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Prepare pipe for grooved mechanical joints as required by coupling manufacturer.

C. Remove scale and dirt on inside and outside before assembly.

D. Prepare piping connections to equipment using jointing system specified.

E. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

F. After completion, fill, clean, and treat systems. See Section 232500 for additional requirements.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

C. Route piping in orderly manner, parallel to building structure, and maintain gradient.

D. Install piping to conserve building space and to avoid interference with use of space.

E. Group piping whenever practical at common elevations.

F. Slope piping and arrange to drain at low points.

END OF SECTION 232113

SECTION 232300 - REFRIGERANT PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping.
B. Refrigerant.
C. Moisture and liquid indicators.
D. Valves.
E. Strainers.
F. Check valves.
G. Pressure regulators.
H. Pressure relief valves.
I. Filter-driers.
J. Solenoid valves.
K. Expansion valves.
L. Receivers.
M. Flexible connections.
N. Engineered wall seals and insulation protection.
O. Exterior penetration accessories.

1.02 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.
B. Section 083100 - Access Doors and Panels.
C. Section 230716 - HVAC Equipment Insulation.
D. Section 230719 - HVAC Piping Insulation.
E. Section 230993 - Sequence of Operations for HVAC Controls.
F. Section 236213 - Packaged Air-Cooled Refrigerant Compressor and Condenser Units.
G. Section 236313 - Air Cooled Refrigerant Condensers.
H. Section 260583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. AHRI 495 - Performance Rating of Refrigerant Liquid Receivers; 2005.
B. AHRI 710 (I-P) - Performance Rating of Liquid-Line Driers; 2009.
C. AHRI 711 (SI) - Performance Rating of Liquid-Line Driers; 2009.

D. AHRI 750 - Thermostatic Refrigerant Expansion Valves; 2007.

E. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2022, with Addendum (2024).

F. ASHRAE Std 34 - Designation and Safety Classification of Refrigerants; 2024, with Addendum (2025).

G. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2025.

H. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.

I. ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes; 2024.

J. ASME B31.5 - Refrigeration Piping and Heat Transfer Components; 2022.

K. ASME B31.9 - Building Services Piping; 2025.

L. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service; 2023.

M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.

N. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

O. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

P. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013 (Reapproved 2021).

Q. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2019.

R. ICC (IMC)-2018 - International Mechanical Code; 2018.

S. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

T. UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.

U. UL 429 - Electrically Operated Valves; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide general assembly of specialties, including manufacturer's catalogue information. Provide manufacturer's catalog data including load capacity.

C. Design Data: Submit design data indicating pipe sizing. Indicate load-carrying capacity of trapeze, multiple pipe, and riser support hangers.

D. Test Reports: Indicate results of leak test, acid test.

E. Manufacturer's Installation Instructions: Indicate support, connection requirements, and isolation for servicing.

F. Submit welders certification of compliance with ASME BPVC-IX.

G. Designer's qualification statement.

H. Installer's qualification statement.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified ensure system components are compatible and joined to ensure integrity of system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

B. Provide pipe hangers and supports in accordance with ASME B31.5 unless indicated otherwise.

C. Liquid Indicators:
   1. Use line size liquid indicators in main liquid line leaving condenser.
   2. If receiver is provided, install in liquid line leaving receiver.
   3. Use line size on leaving side of liquid solenoid valves.

D. Valves:
   1. Use service valves on suction and discharge of compressors.
   2. Use gauge taps at compressor inlet and outlet.
   3. Use gauge taps at hot gas bypass regulators, inlet and outlet.
   4. Use check valves on compressor discharge.
   5. Use check valves on condenser liquid lines on multiple condenser systems.

E. Refrigerant Charging (Packed Angle) Valve: Use in liquid line between receiver shut-off valve and expansion valve.

F. Strainers:
   1. Use line size strainer upstream of each automatic valve.
   2. Where multiple expansion valves with integral strainers are used, use single main liquid line strainer.
   3. Use shut-off valve on each side of strainer.

G. Pressure Relief Valves: Use on ASME receivers and pipe to outdoors.

H. Filter-Driers:
   1. Use a filter-drier immediately ahead of liquid-line controls, such as thermostatic expansion valves, solenoid valves, and moisture indicators.

I. Solenoid Valves:
   1. Use in liquid line of systems operating with single pump-out or pump-down compressor control.

2.02 REGULATORY REQUIREMENTS

A. Comply with ASME B31.9 for installation of piping system.

B. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

C. Products Requiring Electrical Connection: Listed and classified by UL, as suitable for the purpose indicated.

2.03 PIPING

A. Copper Tube: ASTM B280, H58 hard drawn or O60 soft annealed.
   1. Fittings: ASME B16.22 wrought copper.
   2. Joints: Braze, AWS A5.8M/A5.8 BCuP silver/phosphorus/copper alloy.
   3. Mechanical Press Sealed Fittings: Double pressed type complying with UL 207 and ICC (IMC)-2018.

B. Pipe Supports and Anchors:
   1. Provide hangers and supports that comply with MSS SP-58.
      a. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron adjustable swivel, split ring.
   3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
   6. Vertical Support: Steel riser clamp.
   7. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
   8. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.
   9. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

2.04 REFRIGERANT

A. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

B. Refrigerant: R-134a, tetrafluoroethane as defined in ASHRAE Std 34.

2.05 MOISTURE AND LIQUID INDICATORS

A. Manufacturers:
   1. Parker Hannifin/Refrigeration and Air Conditioning
   2. Sporlan, a Division of Parker Hannifin
   3. Or Approved Equal.

B. Indicators: Single port type, UL listed, with copper or brass body, flared or soldered ends, sight glass, color coded paper moisture indicator with removable element cartridge and plastic cap; for maximum temperature of 200 degrees F and maximum working pressure of 500 psi.

2.06 VALVES

A. Manufacturers:
   1. Hansen Technologies Corporation
   2. Henry Technologies
   3. Flomatic Valves

4. Or Approved Equal.

B. Diaphragm Packless Valves:
   1. UL listed, globe or angle pattern, forged brass body and bonnet, phosphor bronze and stainless steel diaphragms, rising stem and handwheel, stainless steel spring, nylon seat disc, soldered or flared ends, with positive backseating; for maximum working pressure of 500 psi and maximum temperature of 275 degrees F.

C. Packed Angle Valves:
   1. Forged brass or nickel plated forged steel, forged brass seal caps with copper gasket, rising stem and seat with backseating, molded stem packing, soldered or flared ends; for maximum working pressure of 500 psi and maximum temperature of 275 degrees F.

D. Ball Valves:
   1. Two piece bolted forged brass body with teflon ball seals and copper tube extensions, brass bonnet and seal cap, chrome plated ball, stem with neoprene ring stem seals; for maximum working pressure of 500 psi and maximum temperature of 300 degrees F.

E. Service Valves:
   1. Forged brass body with copper stubs, brass caps, removable valve core, integral ball check valve, flared or soldered ends, for maximum pressure of 500 psi.

2.07 STRAINERS

A. Manufacturers:
   1. Hansen Technologies Corporation
   2. Parker Hannifin/Refrigeration and Air Conditioning
   3. Sporlan, a Division of Parker Hannifin; _____: www.parker.com/#sle.
   4. Or Approved Equal.

B. Straight Line or Angle Line Type:
   1. Brass or steel shell, steel cap and flange, and replaceable cartridge, with screen of stainless steel wire or monel reinforced with brass; for maximum working pressure of 430 psi.

2.08 CHECK VALVES

A. Manufacturers:
   1. Hansen Technologies Corporation
   2. Parker Hannifin/Refrigeration and Air Conditioning
   3. Sporlan, a Division of Parker Hannifin
   4. Or Approved Equal.
   5. Substitutions: See Section 016000 - Product Requirements.

B. Globe Type:
   1. Cast bronze or forged brass body, forged brass cap with neoprene seal, brass guide and disc holder, phosphor-bronze or stainless steel spring, teflon seat disc; for maximum temperature of 300 degrees F and maximum working pressure of 425 psi.

C. Straight Through Type:

1. Brass body and disc, phosphor-bronze or stainless steel spring, neoprene seat; for maximum working pressure of 500 psi and maximum temperature of 200 degrees F.

2.09 PRESSURE REGULATORS

A. Manufacturers:
   1. Hansen Technologies Corporation
   2. Parker Hannifin/Refrigeration and Air Conditioning
   3. Sporlan, a Division of Parker Hannifin
   4. Or Approved Equal.

B. Brass body, stainless steel diaphragm, direct acting, adjustable over 0 to 80 psi range, for maximum working pressure of 450 psi.

2.10 PRESSURE RELIEF VALVES

A. Manufacturers:
   1. Hansen Technologies Corporation
   2. Henry Technologies
   3. Sherwood Valve/Harsco Corporation
   4. Or Approved Equal.

B. Straight Through or Angle Type: Brass body and disc, neoprene seat, factory sealed and stamped with ASME UV and National Board Certification NB, selected to ASHRAE Std 15, with standard setting of 235 psi.

2.11 FILTER-DRIERS

A. Manufacturers:
   1. Flow Controls Division of Emerson Electric
   2. Parker Hannifin/Refrigeration and Air Conditioning
   3. Sporlan, a Division of Parker Hannifin
   4. Or Approved Equal.

B. Performance:
   1. Flow Capacity - Liquid Line: ____ ton, minimum, rated in accordance with AHRI 710 (I-P) (AHRI 711 (SI)).
   2. Pressure Drop: 2 psi, maximum, when operating at full connected evaporator capacity.
   3. Design Working Pressure: 350 psi, minimum.

C. Cores: Molded or loose-fill molecular sieve desiccant compatible with refrigerant, activated alumina, activated charcoal, and filtration to 40 microns, with secondary filtration to 20 microns; of construction that will not pass into refrigerant lines.

D. Construction: UL listed.
   1. Connections: As specified for applicable pipe type.

2.12 SOLENOID VALVES

A. Manufacturers:

1. Flow Controls Division of Emerson Electric
2. Parker Hannifin/Refrigeration and Air Conditioning
3. Sporlan, a Division of Parker Hannifin
4. Or Approved Equal.

B. Valve: AHRI 760 I-P, pilot operated, copper, brass or steel body and internal parts, synthetic seat, stainless steel stem and plunger assembly (permitting manual operation in case of coil failure), integral strainer, with flared, soldered, or threaded ends; for maximum working pressure of 500 psi.

C. Coil Assembly: UL 429 UL listed, replaceable with molded electromagnetic coil, moisture and fungus proof, with surge protector and color coded lead wires, integral junction box with pilot light.

2.13 EXPANSION VALVES

A. Manufacturers:
1. Flow Controls Division of Emerson Electric
2. Parker Hannifin/Refrigeration and Air Conditioning
3. Sporlan, a Division of Parker Hannifin
4. Or Approved Equal.

B. Angle or Straight Through Type: AHRI 750; design suitable for refrigerant, brass body, internal or external equalizer, bleed hole, adjustable superheat setting, replaceable inlet strainer, with nonreplaceable capillary tube and remote sensing bulb and remote bulb well.

C. Selection: Evaluate refrigerant pressure drop through system to determine available pressure drop across valve. Select valve for maximum load at design operating pressure and minimum 10 degrees F superheat. Select to avoid being undersized at full load and excessively oversized at part load.

2.14 ELECTRONIC EXPANSION VALVES

A. Manufacturers:
1. Flomatic Valves.
2. Parker Hannifin/Refrigeration and Air Conditioning
3. Sporlan, a Division of Parker Hannifin
4. Or Approved Equal.

B. Valve:
1. Brass body with flared or soldered connection, needle valve with floating needle and machined seat, stepper motor drive.

C. Evaporation Control System:
1. Electronic microprocessor based unit in enclosed case, proportional integral control with adaptive superheat, maximum operating pressure function, preselection allowance for electrical defrost and hot gas bypass.

D. Refrigeration System Control: Electronic microprocessor based unit in enclosed case, with proportional integral control of valve, on/off thermostat, air temperature alarm (high and low), solenoid valve control, liquid injection adaptive superheat control, maximum operating pressure function, night setback thermostat, timer for defrost control.

2.15 RECEIVERS

A. Manufacturers:
   1. Henry Technologies
   2. Parker Hannifin/Refrigeration and Air Conditioning
   3. Sherwood Valve/Harsco Corporation
   4. Or Approved Equal.

B. Internal Diameter 6 inch and Smaller:
   1. AHRI 495, UL listed, steel, brazed; 400 psi maximum pressure rating, with tappings for inlet, outlet, and pressure relief valve.

2.16 FLEXIBLE CONNECTORS

A. Manufacturers:
   1. Circuit Hydraulics, Ltd
   2. Flexicraft Industries
   3. Penflex
   4. Or Approved Equal.

B. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure of 500 psi.

2.17 ENGINEERED WALL SEALS AND INSULATION PROTECTION

A. Manufacturers:
   1. Airex Manufacturing, Inc
   2. Or Approved Equal.

B. Basis of Design: Airex Manufacturing, Inc; www.airexmfg.com/#sle.
   1. Pipe Penetration Wall Seal: Airex Titan Outlet.
   2. Refrigeration Pipe Insulation Protection System: Airex E-Flex Guard.
   3. Pipe Penetration Wall Seal and Insulation Protection System: Airex Pro-System Kit.

C. Pipe Penetration Wall Seal: Seals HVAC piping wall penetrations with compression gasket wall mounted rigid plastic outlet cover.
   1. Outlet Cover Color: Gray.

D. Insulation Protection System: Mechanical line insulation and PVC cover.
   1. PVC Insulation Cover Color: Black with full-length velcro fastener.
   2. Weatherization and Ultraviolet Exposure Protection: Comply with ASTM G153.
   3. Water/Vapor Permeability: Comply with ASTM E96/E96M.
   4. Anti-Fungal and Anti-Microbial Resistance: Comply with ASTM G21.
   5. Flame Spread and Smoke Development Rating of 25/450: Comply with ASTM E84.

2.18 EXTERIOR PENETRATION ACCESSORIES

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

B. Sealing Systems for Roof Penetrations: Premanufactured components and accessories as required to preserve integrity of roofing system and maintain roof warranty; suitable for conduits and roofing system to be installed; designed to accommodate existing penetrations where applicable.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain-end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Install refrigeration specialties in accordance with manufacturer's instructions.

B. Route piping in orderly manner, with plumbing parallel to building structure, and maintain gradient.

C. Install piping to conserve building space and avoid interference with use of space.

D. Group piping whenever practical at common elevations and locations. Slope piping one percent in direction of oil return.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.5.
   2. Support horizontal piping as indicated.
   3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   4. Place hangers within 12 inches of each horizontal elbow.

G. Arrange piping to return oil to compressor. Provide traps and loops in piping, and provide double risers as required. Slope horizontal piping 0.40 percent in direction of flow.

H. Provide clearance for installation of insulation and access to valves and fittings.

I. Provide access to concealed valves and fittings. Coordinate size and location of access doors with Section 083100.

J. Flood piping system with nitrogen when brazing.

K. Insulate piping and equipment.

L. Follow ASHRAE Std 15 procedures for charging and purging of systems and for disposal of refrigerant.

M. Locate expansion valve sensing bulb immediately downstream of evaporator on suction line.

N. Install flexible connectors at right angles to axial movement of compressor, parallel to crankshaft.

O. Fully charge completed system with refrigerant after testing.

P. Provide electrical connection to solenoid valves. See Section 260583.

3.03 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for additional requirements.

B. Test refrigeration system in accordance with ASME B31.5.

C. Pressure test system with dry nitrogen to 200 psi. Perform final tests at 27 inches vacuum and 200 psi using halide torch. Test and repair piping until no leakage.

END OF SECTION 232300

SECTION 233100 - HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal ducts.
B. Flexible ducts.
C. Air plenums and casings.

1.02 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.
B. Section 099113 - Exterior Painting: Weld priming, weather resistant, paint or coating.
C. Section 099123 - Interior Painting: Weld priming, paint or coating.
D. Section 230130.51 - HVAC Air-Distribution System Cleaning: Post install duct cleaning.
E. Section 230548 - Vibration and Seismic Controls for HVAC.
F. Section 230713 - Duct Insulation: External insulation and duct liner.
G. Section 233300 - Air Duct Accessories.
H. Section 233319 - Duct Silencers.
I. Section 233600 - Air Terminal Units.
J. Section 233700 - Air Outlets and Inlets: Fabric air distribution devices.

1.03 REFERENCE STANDARDS

A. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; Most Recent Edition Cited by Referring Code or Reference Standard.
B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.
C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.
D. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).
E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
F. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.
G. ICC (IMC) - International Mechanical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2018, with Editorial Revision (2020).

I. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry; 2018, with Editorial Revision (2020).

J. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2017, with Editorial Revision (2020).

K. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements; 2023.

L. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

M. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2024.

N. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

O. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual; 2012.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for duct materials.

C. Shop Drawings: Indicate duct fitting types, gauges, sizes, welds, and configuration.

D. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate per appropriate seal class, following SMACNA (LEAK).

1.05 FIELD CONDITIONS

A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures within acceptable range during and after installation of duct sealants.

1.06 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide UL Class 1 ductwork, fittings, hangers, supports, and appurtenances in accordance with NFPA 90A and SMACNA (DCS) guidelines unless stated otherwise.

B. Provide metal duct unless otherwise indicated. Fibrous glass duct can be substituted at the Contractor's option.

C. Acoustical Treatment: Provide sound-absorbing liners and sectional silencers for metal-based ducts in compliance with Section 233319.

D. Seismic Restraint: Fabricate in compliance with ICC (IMC) requirements; see Section 230548.

E. Duct Shape and Material in accordance with Allowed Static Pressure Range:
   1. Round: Plus or minus 2 in-wc of galvanized steel.
   2. Rectangular: Plus or minus 1/2 in-wc of galvanized steel.

F. Duct Sealing and Leakage in accordance with Static Pressure Class:
   1. Duct Pressure Class and Material for Common Mechanical Ventilation Applications:
      a. Supply Air: 1/2 in-wc pressure class, galvanized steel.
      b. Outside Air Intake: 1/2 in-wc pressure class, galvanized steel.
      c. Return and Relief Air: 1/2 in-wc pressure class, galvanized steel.
      d. General Exhaust Air: 1/2 in-wc pressure class, galvanized steel.
      e. Heating or Combustion Air: 1/2 in-wc pressure class, galvanized steel.
   2. Medium and High Pressure Service: Above 3 in-wc:
      a. Seal: Class A, apply sealing of transverse joints, longitudinal seams, and duct wall penetrations.
      b. Leakage:
         1) Rectangular: Class 6 or 6 cfm/100 sq ft.
         2) Round: Class 3 or 3 cfm/100 sq ft.

G. Duct Fabrication Requirements:
   1. Duct and Fitting Fabrication and Support: SMACNA (DCS) including specifics for continuously welded round and oval duct fittings.
   2. Use reinforced and sealed sheet-metal materials at recommended gauges for indicated operating pressures or pressure class.
   3. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide airfoil turning vanes of perforated metal with glass fiber insulation.
   4. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
   5. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
   6. Provide turning vanes of perforated metal with glass fiber insulation when an acoustical lining is required.
   7. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.02 METAL DUCTS

A. Material Requirements:
   1. Galvanized Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.

B. Fire Rated Ducts:
   1. Two-hour, Fire Rated Duct:
      a. UL labeled, construct of 18-gauge, 0.0516-inch galvanized steel.

b. R-Value: 4.5 when tested in accordance with ASTM C177.

C. Round Metal Ducts:
1. Round Single Wall Duct: Round lock seam duct with galvanized steel outer wall.
2. Round Connection System: Interlocking duct connection system per SMACNA (DCS).

D. Round Spiral Duct:
1. Round spiral lock seam duct with galvanized steel outer wall.

E. Connectors, Fittings, Sealants, and Miscellaneous:
1. Fittings: Manufacture with solid inner wall of perforated galvanized steel.
2. Transverse Duct Connection System: SMACNA "E" rated rigid class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips in accordance with SMACNA (DCS).
3. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
a. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
b. VOC Content: Not more than 250 g/L, excluding water.
c. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
d. For Use with Flexible Ducts: UL labeled.
e. Manufacturers:
1) Carlisle HVAC Products
2) Design Polymerics
3) Ductmate Industries, Inc, a DMI Company
4) Elgen Manufacturing Company, Inc
5) H.B. Fuller Construction Products, Inc
6) Or Approved Equal.
4. Gasket Tape:
a. Provide butyl rubber gasket tape for a flexible seal between transfer duct connector (TDC), transverse duct flange (TDF), applied flange connections, and angle ring connections.
b. Manufacturers:
1) Design Polymerics
2) Elgen Manufacturing Company, Inc
3) Or Approved Equal.
5. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
6. Hanger Fasteners: Attach hangers to structure using appropriate fasteners as follows:
a. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
b. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
c. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
d. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
e. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
f. Other Types: As required.
g. Manufacturers:
1) Powers Fasteners, Inc

2) HILTI.
3) Or Approved Equal.

F. Flexible Ducts: UL 181, Class 1, polyethylene film, mechanically fastened and rolled using galvanized steel to form a spiral helix.
1. Insulation: R6 insulation with polyethylene vapor barrier film.
2. Pressure Rating: 10 in-wc positive and 5 in-wc negative.
3. Maximum Velocity: 5500 fpm.
4. Temperature Range: Minus 20 degrees F to 250 degrees F.
5. Manufacturers:
a. Flexmaster USA, a brand of Masterduct, Inc
b. Or Approved Equal.

G. Acoustic Flexible Ducts: UL 181, Class 1, spun-bond nylon, mechanically fastened and rolled using galvanized steel to form a spiral helix.
1. Insulation: Fiberglass insulation with metalic vapor barrier.
2. Inner Core: Spun-bonded, nonwoven inner core.
3. Pressure Rating: 6 in-wc positive and 5 in-wc negative.
4. Maximum Velocity: 4000 fpm.
5. Temperature Range: Minus 20 degrees F to 250 degrees F.
6. Manufacturers:
a. Flexmaster USA, a brand of Masterduct, Inc.
b. Or Approved Equal.

2.03 FLEXIBLE DUCTS

A. Flexible Air Ducts:
1. UL 181, Class 1, polyethylene film supported by helically wound spring steel wire.
2. Insulation: Fiberglass insulation with polyethylene vapor barrier film.
3. Pressure Rating: From 10 in-wc to 5 in-wc negative.
4. Maximum Velocity: 5,500 fpm.
5. Temperature Range: Minus 20 to 250 degrees F.
6. Manufacturers:
a. Flexmaster USA, a brand of Masterduct, Inc
b. Or Approved Equal.

2.04 AIR PLENUMS AND CASINGS

A. Fabricate in accordance with SMACNA (DCS) for indicated operating pressures indicated.

B. Minimum Fabrication Requirements:
1. Fabricate acoustic plenum or casing with reinforcing turned inward.
2. Provide 16-gauge, 0.059-inch sheet steel back facing and 22-gauge, 0.029-inch perforated sheet steel front facing with 3/32 inch diameter holes on 5/32 inch centers.
3. Construct panels 3 inches thick, packed with 4.5 pcf minimum glass fiber insulation media, on inverted channel of 16-gauge, 0.059-inch sheet steel.
4. Mount floor-mounted plenum or casings on 4-inch high concrete curbs. At floor, rivet panels on 8-inch centers to angles. Where floors are acoustically insulated,

provide liner of galvanized 18-gauge, 0.052-inch expanded metal mesh supported at 12-inch centers, turned up 12 inches at sides with sheet metal shields.

C. Access Doors:
   1. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection.
   2. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles.
   3. Provide clear wire glass observation ports, minimum 6 by 6 inch size.

D. Fire-Rated Metal Panels:
   1. Fire Rating: 60 minutes when tested in accordance with ASTM E119.
   2. Material: Steel-faced composite panel with noncombustible structural high density mineral fiber core, UL or ETL labeled, nonload bearing fire separations.
      a. Facing: Galvanized steel (G90), 24 gauge (0.0275 inch).
      b. Finish: Unpainted.
      c. Core: Mineral wool board.
      d. Structural: Nonload bearing.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install, support, and seal ducts in accordance with SMACNA (DCS).

B. Install products following the manufacturer's instructions.

C. Comply with safety standards NFPA 90A and NFPA 90B.

D. During construction, provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering the ductwork system.

E. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

F. Flexible Ducts: Connect to metal ducts with adhesive.

G. Duct sizes indicated are precise inside dimensions. For lined ducts, maintain sizes inside lining.

H. Provide openings in ductwork as indicated to accommodate thermometers and controllers. Provide pilot tube openings as indicated for testing of systems, complete with metal can with spring device or screw to insure against air leakage. For openings, insulate ductwork and install insulation material inside a metal ring.

I. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

J. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with a crimp in the direction of airflow.

K. Use double nuts and lock washers on threaded rod supports.

L. Connect terminal units to supply ducts directly or with one foot maximum length of flexible duct. Do not use flexible duct to change direction.

M. Connect diffusers or light troffer boots to low-pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp.

N. Set plenum doors at 6 to 12 inches above floor. Arrange door swings so that fan static pressure holds door in closed position.

O. At exterior wall louvers, seal duct to louver frame and install blank-out panels.

P. Louver Fit-out:
   1. Provide blank-out panels sealing available area of wall-mounted exterior-faced louver when connected ductwork is smaller than actual louver free area, and duct outlet is smaller than the louver frame.
   2. Use the same duct material painted black on the exterior side, then seal louver frame and duct.

Q. Fire Partitions: Provide firestopping sealing. See Section 078400.

R. Duct Accessories, Terminal Units, Inlets, and Outlets: Interconnect as indicated in Sections 233300, 233600, and 233700.

S. Duct Insulation: Provide duct insulation. See Section 230713.

T. Painting: Provide surface finish as indicated on drawings. See Sections 099113 and 099123.

3.02 CLEANING

A. See Section 017419 - Construction Waste Management and Disposal for additional requirements.

B. Clean thoroughly each duct system. See Section 230130.51.

C. Clean duct system by forcing air at high velocity through duct to remove accumulated dust. Clean half the system at a time to obtain sufficient air. Protect equipment that could be harmed by excessive dirt with temporary filters or bypass during cleaning.

D. Clean duct systems with high-power vacuum machines. Protect equipment that could be harmed by excessive dirt with filters or bypass during cleaning. Provide adequate access to the ductwork for cleaning purposes.

END OF SECTION 233100

SECTION 233300 - AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air turning devices/extractors.
B. Backdraft dampers - metal.
C. Backdraft dampers - fabric.
D. Combination fire and smoke dampers.
E. Combination fire and smoke dampers - corridor dampers.
F. Duct access doors.
G. Duct test holes.
H. Fire dampers.
I. Flexible duct connectors.
J. Smoke dampers.
K. Smoke and fire-smoke damper test module.
L. Volume control dampers.
M. Low leakage (Class 1A) control dampers.
N. Miscellaneous Products:
    1. Damper operators.
    2. Damper position switch.
    3. Internal strut end plugs.
    4. Duct opening closure film.
    5. Airflow meters, fixed-resistance type.

1.02 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.
B. Section 230548 - Vibration and Seismic Controls for HVAC.
C. Section 233100 - HVAC Ducts and Casings.
D. Section 233600 - Air Terminal Units: Pressure regulating damper assemblies.
E. Section 253513 - Integrated Automation Actuators and Operators: Damper operators.
F. Section 253516 - Integrated Automation Sensors and Transmitters: Damper position switch.
G. Section 253523 - Integrated Automation Control Dampers: Product furnishing.

1.03 REFERENCE STANDARDS

A. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

B. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.

C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

D. NFPA 92 - Standard for Smoke Control Systems; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2024.

F. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.

G. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

H. UL 33 - Safety Heat Responsive Links for Fire-Protection Service; Current Edition, Including All Revisions.

I. UL 555 - Standard for Fire Dampers; Current Edition, Including All Revisions.

J. UL 555S - Standard for Smoke Dampers; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide for shop-fabricated assemblies including volume control dampers, duct access doors, duct test holes, and hardware used. Include electrical characteristics and connection requirements.

C. Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS

A. Manufacturers:
   1. Carlisle HVAC Products
   2. Elgen Manufacturing Company, Inc
   3. Krueger-HVAC, Division of Air System Components
   4. Ruskin Company
   5. Titus HVAC, a brand of Johnson Controls
   6. Or Approved Equal.

B. Multi-blade device with blades aligned in short dimension; steel construction; with individually adjustable blades, mounting straps.

C. Multi-blade device with radius blades attached to pivoting frame and bracket, steel construction, with push-pull operator strap.

2.02 BACKDRAFT DAMPERS - METAL

A. Manufacturers:
   1. Louvers & Dampers, Inc, a brand of Mestek, Inc

2. Nailor Industries, Inc
3. Ruskin Company
4. United Enertech
5. Or Approved Equal.

B. Gravity Backdraft Dampers, Size 18 by 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.

C. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.

2.03 BACKDRAFT DAMPERS - FABRIC

A. Fabric Backdraft Dampers: Factory-fabricated.
1. Blades: Neoprene coated fabric material.
2. Birdscreen: 1/2 inch nominal mesh of galvanized steel or aluminum.
3. Maximum Velocity: 1000 fpm (5 mps) face velocity.

2.04 COMBINATION FIRE AND SMOKE DAMPERS

A. Manufacturers:
1. AireTechnologies, Inc, a DMI Company; _____: www.airetechnologies.com/#sle.
2. Lloyd Industries, Inc
3. Louvers & Dampers, Inc, a brand of Mestek, Inc
4. Nailor Industries, Inc
5. NCA, a brand of Metal Industries Inc
6. Pottorff
7. Ruskin Company
8. United Enertech
9. Or Approved Equal.

B. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated.

C. Provide factory sleeve and collar for each damper.

D. Multiple Blade Dampers: Fabricate with 16 gauge, 0.0598 inch galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, stainless steel jamb seals, 1/8 by 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock, and 1/2 inch actuator shaft.

E. Operators: UL listed and labeled; spring-return, electric-type suitable for 120 volts, single phase, 60 Hz. Provide end switches to indicate damper position. Locate damper operator on interior of duct and link to damper operating shaft.

F. Electro Thermal Link: Fusible link melting at 165 degrees F; 120 volts, single phase, 60 Hz; UL listed and labeled.

2.05 COMBINATION FIRE AND SMOKE DAMPERS - CORRIDOR DAMPERS

A. Manufacturers:

1. Ruskin Company
2. United Enertech
3. Or Approved Equal.

B. Fabricate in accordance with NFPA 90A, UL 555, UL 555S, and as indicated.

C. Provide factory sleeve and collar for each damper.

D. Multiple Blade Dampers: Fabricate with 16 gauge, 0.0598 inch galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, stainless steel jamb seals, 1/8 by 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock, and 1/2 inch actuator shaft.

E. Operators: UL listed and labeled; spring-return, electric type suitable for 120 volts, single phase, 60 Hz. Provide end switches to indicate damper position. Locate damper operator on interior of duct and link to damper operating shaft.

F. Electro Thermal Link: Fusible link melting at 165 degrees F; 120 volts, single phase, 60 Hz; UL listed and labeled.

2.06 DUCT ACCESS DOORS

A. Manufacturers:
1. Acudor Products Inc, a Division of Nelson Industrial Inc
2. Ductmate Industries, Inc, a DMI Company
3. Nailor Industries, Inc
4. Ruskin Company
5. Or Approved Equal.

B. Fabricate in accordance with SMACNA (DCS) and as indicated.

C. Fabrication: Rigid and close fitting of galvanized steel with sealing gaskets and quick-fastening locking devices. For insulated ducts, install minimum 1-inch thick insulation with sheet metal cover.
1. Less Than 12 inches Square: Secure with sash locks.
2. Up to 18 inches Square: Provide two hinges and two sash locks.
3. Up to 24 by 48 inches: Three hinges and two compression latches with outside and inside handles.

D. Access doors with sheet metal screw fasteners are not acceptable.

2.07 DUCT TEST HOLES

A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.
1. Manufacturers:
a. Carlisle HVAC Products; Dynair Test Port with Red Cap with O-Ring Seal: www.carlislehvac.com/#sle.
b. Or Approved Equal.

2.08 FIRE DAMPERS

A. Manufacturers:
   1. AireTechnologies, Inc, a DMI Company
   2. Lloyd Industries, Inc
   3. Nailor Industries, Inc
   4. Pottorff
   5. Ruskin Company
   6. Or Approved Equal.

B. Fabricate in accordance with NFPA 90A and UL 555, and as indicated.

C. Horizontal Dampers: Galvanized steel, 22-gauge, 0.0299-inch frame, stainless steel closure spring, and lightweight, heat-retardant, non-asbestos fabric blanket.

D. Curtain Type Dampers: Galvanized steel with interlocking blades. Provide stainless steel closure springs and latches for horizontal installations. Configure with blades out of air stream except for 1-inch pressure-class ducts up to 12 inches in height.

E. Multiple Blade Dampers: 16-gauge, 0.0598-inch galvanized steel frame and blades, oil-impregnated bronze or stainless steel sleeve bearings and plated steel axles, 1/8 by 1/2 inch plated steel concealed linkage, stainless steel closure spring, blade stops, and lock.

F. Fusible Links: UL 33, separate at 160 degrees F with adjustable link straps for combination fire/balancing dampers.

2.09 FLEXIBLE DUCT CONNECTORS

A. Manufacturers:
   1. Carlisle HVAC Products
   2. Ductmate Industries, Inc, a DMI Company
   3. Elgen Manufacturing Company, Inc
   4. Or Approved Equal.

B. Fabricate in accordance with SMACNA (DCS) and as indicated.

C. Flexible Duct Connections: Fabric crimped into metal edging strip.

2.10 SMOKE DAMPERS

A. Manufacturers:
   1. AireTechnologies, Inc, a DMI Company
   2. Nailor Industries, Inc
   3. Ruskin Company
   4. United Enertech
   5. Or Approved Equal.

B. Fabricate in accordance with NFPA 90A and UL 555S, and as indicated.

C. Dampers: UL Class 1 airfoil blade type smoke damper, normally open automatically operated by pneumatic actuator.

D. Electro Thermal Link: Fusible link melting at 165 degrees F; 120 volts, single phase, 60 Hz; UL listed and labeled.

2.11 SMOKE AND FIRE-SMOKE DAMPER TEST MODULE

A. Addressable fire alarm system proprietary controller module preconfigured for remote testing of dedicated smoke damper or combination fire-smoke damper.

B. Provide module, accessories, and connectivity to meet NFPA 80 and NFPA 105 requirements.

C. Products:
   1. Ruskin Company
   2. Or Approved Equal.

2.12 VOLUME CONTROL DAMPERS

A. Products for Automatic Controls: See Section 253523.

B. Manufacturers:
   1. AireTechnologies, Inc, a DMI Company
   2. Louvers & Dampers, Inc, a brand of Mestek, Inc
   3. Elgen Manufacturing Company, Inc
   4. MKT Metal Manufacturing
   5. Nailor Industries, Inc
   6. NCA, a brand of Metal Industries Inc.
   7. Ruskin Company
   8. Or Approved Equal.

C. Fabricate in accordance with SMACNA (DCS) and as indicated.

D. Splitter Dampers:
   1. Material: Same gauge as duct to 24 inches size in either direction, and two gauges heavier for sizes over 24 inches.
   2. Blade: Fabricate of single thickness sheet metal to streamline shape, secured with continuous hinge or rod.
   3. Operator: Minimum 1/4 inch diameter rod in self aligning, universal joint action, flanged bushing with set screw.

E. Single Blade Dampers:
   1. Fabricate for duct sizes up to 6 by 30 inch.
   2. Blade: 24 gauge, 0.0239 inch, minimum.

F. Multi-Blade Damper: Fabricate consisting of opposed blades with maximum blade sizes 8 by 72 inches. Assemble center- and edge-crimped blades in prime-coated or galvanized-channel frame with suitable hardware.
   1. Blade: 18 gauge, 0.0478 inch, minimum.

G. End Bearings: Except in round ducts 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon, thermoplastic elastomer, or sintered bronze bearings.
   1. Manufacturers:
      a. Carlisle HVAC Products
      b. Elgen Manufacturing Company, Inc
      c. Or Approved Equal.

2.13 LOW LEAKAGE (CLASS 1A) CONTROL DAMPERS

A. Manufacturers:

1. Ruskin Company
2. United Enertech
3. Or Approved Equal.

B. Maximum Leakage Allowed: 3 cfm/sq ft at 1 in-wc.

C. Frame:
1. Material: 20-gauge galvanized steel.
2. Free-area: Single cross section.

D. Blade:
1. Type: Single-blade rectangle shape.
2. Operation: Opposed type.
3. Maximum Individual Blade Height: 8 inches.
4. Material: 12-gauge galvanized steel.
5. Authority: Opposed type, 5 to 50 percent (typically 10 percent).

E. Insulation: Water-resistant sound absorbing material.

F. Temperature Service Range: Minus 25 to 185 degrees F.

2.14 MISCELLANEOUS PRODUCTS

A. Damper Operators: Provide electric operators; see Section 253513.

B. Damper position switch; see Section 253516.

C. Internal Strut End Plugs: Combination end-mounting and sealing plugs for metal conduit used as internal reinforcement struts for metal ducts; plug crimped inside conduit with outside gasketed washer seal.

D. Duct Opening Closure Film: Mold-resistant, self-adhesive film to keep debris out of ducts during construction.
1. Thickness: 2 mils.
2. High tack water based adhesive.
3. UV stable light blue color.
4. Elongation Before Break: 325 percent, minimum.
5. Manufacturers:
a. Carlisle HVAC Products
b. Elgen Manufacturing Company, Inc
c. Or Approved Equal.

E. Airflow Meters, Fixed-Resistance Type:
1. Manufacturers:
a. Air Monitor, a Brand of Onicon, Inc
b. KMC Controls
c. Or Approved Equal.
2. Sensor Type: Provide duct-inserted probe, duct-inserted pitot-tube assembly, and wall-mounted assembly for outside air with built-in transmitter.
3. Flow Range: Equivalent velocity pressure required to match scheduled flow range with 100-to-1 signal turndown ratio.
4. Accuracy: Two percent over a 30 to 50 millisecond response time, adjustable.
5. Linearity: 0.1 percent of calibrated span.
6. Minimum Overpressure: 150 percent over highest range value.
7. Display Interface: Built-in, graphic type.

8. Output: Two-wire, 4 to 20 mA.
9. Access Box: NEMA EN 10250, Type 1 with hinged cover housing and cable access ports.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). See Section 233100 for duct construction and pressure class.

B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.

C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96 Provide minimum 8 by 8 inch size access door for hand and shoulder access, or as indicated on drawings. Provide minimum 4 by 4 inch size access door for balancing dampers only. Review locations prior to fabrication.

D. Provide duct test holes where indicated and required for testing and balancing purposes.

E. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire-rated components, and where required by authorities having jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.

F. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.

G. Demonstrate re-setting of fire dampers to Owner's representative.

H. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.

I. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.

J. Use splitter dampers only where indicated.

K. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION 233300

SECTION 233416 - CENTRIFUGAL HVAC FANS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backward inclined centrifugal fans.
B. Forward curved centrifugal fans.
C. Bearings and drives.
D. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 230513 - Common Motor Requirements for HVAC Equipment.
B. Section 230548 - Vibration and Seismic Controls for HVAC.
C. Section 230713 - Duct Insulation.
D. Section 233300 - Air Duct Accessories: Backdraft dampers.
E. Section 260583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; 2015 (Reaffirmed 2020).
B. AMCA (DIR) - (Directory of) Products Licensed Under AMCA International Certified Ratings Program; 2015.
C. AMCA 99 - Standards Handbook; 2016.
D. AMCA 210 - Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating; 2016, with Errata (2018).
E. AMCA 300 - Reverberation Room Methods of Sound Testing of Fans; 2024.
F. AMCA 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data; 2022.
G. NEMA MG 00001 - Motors and Generators; 2024.
H. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide data on centrifugal fans and accessories including fan curves with specified operating point plotted, power, rpm, sound power levels for both fan inlet

and outlet at rated capacity, and electrical characteristics and connection requirements.

1.05 FIELD CONDITIONS

A. Permanent fans may not be used for ventilation during construction.

B. Permanent fans may be used for ventilation during construction only after ductwork is clean, filters are in place, bearings have been lubricated, and fan has been test run under observation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. ACME Engineering and Manufacturing Corporation

B. Carnes, a division of Carnes Company Inc

C. Loren Cook Company

D. PennBarry, Division of Air System Components

E. Rosenberg USA, Inc

F. Twin City Fan & Blower

G. Greenheck.

H. Or Approved Equal

2.02 PERFORMANCE REQUIREMENTS

A. Performance Ratings: Determined in accordance with AMCA 210 and bearing the AMCA Certified Rating Seal.

B. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.

C. Fabrication: Comply with AMCA 99.

D. Performance Base: Sea level conditions.

E. Temperature Limit: Maximum 300 degrees F.

F. Static and Dynamic Balance: Eliminate vibration or noise transmission to occupied areas.

2.03 WHEEL AND INLET

A. Backward Inclined: Steel or aluminum construction with smooth curved inlet flange, heavy back plate, backwardly curved blades welded or riveted to flange and backplate; cast iron hub riveted to back plate and keyed to shaft with set screws.

B. Forward Curved: Black enameled steel construction with inlet flange, backplate, shallow blades with inlet and tip curved forward in direction of airflow, mechanically secured to flange and back plate; steel hub swaged to backplate and keyed to shaft with set screw.

2.04 HOUSING

A. Heavy gauge steel, spot welded for AMCA 99 Class I and II fans, and continuously welded for Class III, adequately braced, designed to minimize turbulence with spun inlet bell and shaped cut.

B. Factory finish before assembly to manufacturer's standard. For fans handling air downstream of humidifiers, provide two additional coats of paint. Prime coating on aluminum parts is not required.

C. Provide bolted construction with horizontal flanged split housing, where indicated.

D. Fabricate plug fans without volute housing using steel-lined cabinet; see Section 230713.

2.05 BEARINGS AND DRIVES

A. Bearings: Heavy duty pillow block type, selfgreasing ball bearings, with ABMA STD 9 life at 50,000 hours.

B. Shafts: Hot rolled steel, ground and polished, with keyway, protectively coated with lubricating oil, and shaft guard.

C. Drive: Cast iron or steel sheaves, dynamically balanced, keyed. Variable and adjustable pitch sheaves for motors 15 hp and under, selected so required rpm is obtained with sheaves set at mid Fixed sheave for 20 hp and over, matched belts, and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.

D. Belt Guard: Fabricate to SMACNA (DCS); 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

2.06 ACCESSORIES

A. Fixed Inlet Vanes: Steel construction with fixed cantilevered inlet guide vanes welded to inlet bell.

B. Discharge Dampers: Parallel blade heavy-duty steel damper assembly with blades constructed of two plates formed around and welded to shaft, channel frame, sealed ball bearings, with blades linked out of air stream to single control lever.

C. Inlet/Outlet Screens: Galvanized steel welded grid.

D. Access Doors: Shaped to fit scroll, with quick opening latches and gaskets.

E. Scroll Drain: 1/2 inch steel pipe coupling welded to low point of fan scroll.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install fans with resilient mountings and flexible electrical leads, see Sections 230548 and 260583.

C. Install flexible connections between fan inlet and discharge ductwork; see Section 233300. Ensure metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.

D. Install fan restraining snubbers; see Section 230548. Adjust snubbers to prevent tension in flexible connectors when fan is operating.

E. Provide fixed sheaves required for final air balance.

F. Provide safety screen where inlet or outlet is exposed.

G. Pipe scroll drains to nearest floor drain.

H. Provide backdraft dampers on exhaust fans located at discharge side; see Section 233300.

END OF SECTION 233416

SECTION 233700 - AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Diffusers:
B. Rectangular ceiling diffusers.
C. Slot ceiling diffusers.
D. Registers/grilles:
   1. Ceiling-mounted, exhaust and return register/grilles.
   2. Ceiling-mounted, linear exhaust and return register/grilles.
   3. Ceiling-mounted, supply register/grilles.
   4. Wall-mounted, supply register/grilles.
   5. Wall-mounted, exhaust and return register/grilles.
E. Duct-mounted supply and return registers/louvers.
F. Fabric air distribution devices.
G. Louvers:
   1. Combination louvers.
H. Goosenecks.
I. Gravity ventilators.

1.02 REFERENCE STANDARDS

A. AHRI 880 (I-P) - Performance Rating of Air Terminals; 2017 (Reaffirmed 2023).
B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; 2023.
C. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Air Inlets; 2023.
D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2024.
E. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.
F. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2024.
G. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.
H. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.
I. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.
J. UL 2518 - Standard for Safety Air Dispersion Systems; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

C. Project Record Documents: Record actual locations of air outlets and inlets.

1.04 QUALITY ASSURANCE

A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.

B. Test and rate louver performance in accordance with AMCA 500-L.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. American Louver Company

B. Carnes, a division of Carnes Company Inc

C. Krueger-HVAC

D. Linx Industries, Inc, a DMI Company

E. Price Industries

F. Prihoda North America

G. Ruskin Company

H. Titus, a brand of Air Distribution Technologies

I. Tuttle and Bailey

J. Or Approved Equal.

2.02 RECTANGULAR CEILING DIFFUSERS

A. Type: Provide rectangular and square formed adjustable and core removable ceiling diffusers constructed to maintain 360 degree discharge air pattern with sectorizing baffles where indicated.

B. Connections: Round.

C. Frame: Provide surface mount and inverted T-bar type. In plaster ceilings, provide plaster frame and ceiling frame.

D. Fabrication: Steel with baked enamel finish.

E. Color: As selected by Architect from manufacturer's standard range.

F. Accessories: Provide radial opposed blade volume control damper; removable core, wire guard, equalizing grid, operating rod extension, anti-smudging device, and gaskets for surface mounted diffusers with damper adjustable from diffuser face.

2.03 CEILING SLOT DIFFUSERS

A. Type: Continuous 1/2 inch wide slot, 1 slots wide, with adjustable vanes for left, right, or vertical discharge; integral ceiling fire damper.

B. Fabrication: Aluminum extrusions with factory clear lacquer finish.

C. Color: To be selected by Architect from manufacturer's standard range.

D. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket, mitered end border.

E. Plenum: Integral, galvanized steel, insulated.

2.04 DUCT-MOUNTED SUPPLY AND RETURN REGISTERS/LOUVERS

A. Type: Duct-mounted, rectangular register for round-spiral duct with adjustable pivot-ended blades, end caps, built-in volume damper, and dual cover flanges to lay flush on duct surface regardless of diameter. Performance to match manufacturer's catalog data.

B. Material: 22 gauge, 0.0299 inch.

2.05 CEILING SUPPLY REGISTERS/GRILLES

A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.

B. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.

C. Color: As selected by Architect from manufacturer's standard range.

D. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.06 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, vertical face.

B. Frame: 1-1/4 inch margin with countersunk screw mounting.

C. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.

D. Color: To be selected by Architect from manufacturer's standard range.

E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face where not individually connected to exhaust fans.

2.07 CEILING LINEAR EXHAUST AND RETURN GRILLES

A. Type: Streamlined blades with 90 degree one-way deflection, 1/8 by 3/4 inch on 1/4 inch centers.

B. Frame: 1-1/4 inch margin, extra heavy for floor mounting, with countersunk screw mounting.

C. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.

D. Color: To be selected by Architect from manufacturer's standard range.

E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.08 WALL SUPPLY REGISTERS/GRILLES

A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, vertical face, single deflection.

B. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille with two-way deflection.

C. Frame: 1-1/4 inch margin with countersunk screw mounting and gasket.

D. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.

E. Fabrication: Aluminum extrusions with factory clear lacquer finish.

F. Color: To be selected by Architect from manufacturer's standard range.

G. Damper: Integral, gang-operated opposed blade type with removable key operator, operable from face.

2.09 WALL EXHAUST AND RETURN REGISTERS/GRILLES

A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, vertical face.

B. Frame: 1-1/4 inch margin with countersunk screw mounting.

C. Fabrication: Steel frames and blades, with factory baked enamel finish.

D. Color: To be selected by Architect from manufacturer's standard range.

E. Damper: Integral, gang-operated, opposed blade type with removable key operator, operable from face.

2.10 FABRIC AIR DISTRIBUTION DEVICES

A. General Requirements:
   1. Diffuser material to comply with ASTM E84, UL 723, UL 2518, NFPA 90A, and NFPA 90B.
   2. Air Dispersion Method:
   3. Hanger Supports:

2.11 LOUVERS

A. Type: 4 inch deep frame with blades on 45 degree slope with center baffle and return bend, heavy channel frame, 1/2 inch square mesh screen over intake or exhaust end.

B. Fabrication: 16 gauge, 0.0598 inch (1.52 mm) thick galvanized steel thick galvanized steel welded assembly, with factory prime coat finish.

C. Color: To be selected by Architect from manufacturer's standard range.

D. Mounting: Furnish with interior flat flange for installation.

2.12 GOOSENECKS

A. Fabricate in accordance with of minimum 18 gauge, 0.0598 inch galvanized steel.

B. Mount on minimum 12 inch high curb base where size exceeds 9 by 9 inch.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Comply with SMACNA (ASMM) for flashing/counter-flashing of roof penetrations and supports for roof curbs and roof mounted equipment.

C. Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.

D. Install diffusers to ductwork with air tight connection.

E. Provide balancing dampers on duct take-off to diffusers and grilles and registers, despite whether dampers are specified as part of diffuser, or grille and register assembly.

F. Paint ductwork visible behind air outlets and inlets matte black, see Section 099123.

3.02 CLOSEOUT ACTIVITIES

A. Demonstrate operational system to Owner's representative.

B. Instruct Owner's representative to maintain system and use occupant controls or interfaces, as required.

3.03 PROTECTION

A. Protect installed products until completion of project.

B. Replace, repair, or touch-up damaged products before Substantial Completion.

END OF SECTION 233700

SECTION 238124 - COMPUTER ROOM AIR CONDITIONERS - FLOOR MOUNTED

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air conditioning units.
B. Controls and control panels.

1.02 RELATED REQUIREMENTS

A. Section 284400 - Refrigerant Detection and Alarm.

1.03 REFERENCE STANDARDS

A. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels; 2023.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide for manufactured products and assemblies. Indicate water, drain, refrigeration, rough-in connections, and electrical characteristics and connection requirements.
C. Shop Drawings: Indicate manufactured products and assemblies. Indicate water, drain, refrigeration, rough-in connections, and electrical characteristics and connection requirements.
D. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.
E. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.
B. Warranty: Include coverage of refrigeration compressors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. American Power Conversion Corporation; _____: www.apcc.com/#sle.

B. Compu-Aire, Inc; _____: www.compu-aire.com/#sle.

C. Liebert, a brand of Vertiv Co; _____: www.vertivco.com/#sle.

D. Or Approved Equal.

2.02 AIR CONDITIONING UNITS

A. Description: Packaged, water cooled, factory assembled, pre-wired and pre-piped unit, consisting of cabinet, fans, filters, humidifier, and controls.

B. Assembly: Up-flow air delivery, in draw-through configuration.

C. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) no greater than that allowed by federal code

D. Energy Efficiency:

2.03 CABINET AND FRAME

2.04 EVAPORATOR FANS AND MOTORS

A. Fans: Double inlet, forward curved centrifugal fans, statically and dynamically balanced, on steel shaft with self-aligning grease lubricated ball bearings, and V-belt drive.

B. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, keyed, variable and adjustable pitch motor sheave, minimum of two matched belts, drive rated minimum 2.0 times nameplate rating of motor.

2.05 COMPRESSORS

A. Type: Semi-hermetic with suction gas cooled motors, vibration isolators, thermal overloads, oil sight glass, manual reset high pressure switch, pump down low pressure switch, suction line strainer, reversible oil pumps, 1750 rpm.

B. Compressors: Individually serviceable without dismantling other components or removing unit from service.

C. Refrigeration Circuits: Two, each with hot gas mufflers, thermal expansion valve with external equalizer, liquid line solenoid valve, liquid line filter-drier, refrigerant sight glass with moisture indicator, service shut-off valves and charging valves and accumulator sized for liquid seal under light load.

2.06 EVAPORATOR COILS

A. Alternate row circuits, direct expansion cooling coils of seamless copper tubes expanded into aluminum fins in A-frame configuration.

B. Mount coil assembly in stainless steel drain pan.

2.07 CONDENSERS

A. Water Cooled: Shell and tube type to ASME BPVC-VIII-1 with liquid line stop valve and head pressure actuated water regulating valve. Terminate outside cabinet for easy external connections.

B. Air Cooled Refrigerant Condenser:
   1. Corrosion resistant cabinet.
   2. Copper tube aluminum fin coils arranged for two circuits.
   3. Multiple direct drive propeller fans with permanently lubricated ball bearings.
   4. Single phase motors with internal overload protection.
   5. Provide capacity control by cycling fans.

2.08 CHILLED WATER COILS

A. Seamless copper tubes expanded into aluminum fins with three way modulated valve.

2.09 FILTERS

2.10 HUMIDIFIER

2.11 ELECTRICAL PANEL

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that flooring system is ready to receive work and opening dimensions are as indicated on shop drawings.

B. Verify that proper power supply is available and of the correct characteristics.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Coordinate installation of computer room air conditioning units with computer room raised floor installer.

C. Provide refrigerant detection systems for units and piping; see Section 284400.

3.03 FIELD QUALITY CONTROL

A. Provide the services of the manufacturer's field representative to start and adjust systems and equipment and instruct operating personnel.

3.04 SYSTEM STARTUP

A. Prepare and start systems. Set initial temperature and humidity set points.

3.05 MAINTENANCE

A. Provide service and maintenance of computer room air conditioning unit system for one year from Date of Substantial Completion.

END OF SECTION 238124

SECTION 238129 - VARIABLE REFRIGERANT FLOW HVAC SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air-source outdoor units.
B. Refrigerant piping.
C. Refrigerant branch units.
D. Indoor units.

1.02 RELATED REQUIREMENTS

A. Section 221005 - Plumbing Piping: Condensate drain piping.
B. Section 223000 - Plumbing Equipment: Cooling condensate removal pumps.
C. Section 230529 - Hangers and Supports for HVAC Piping and Equipment.
D. Section 230719 - HVAC Piping Insulation.
E. Section 230800 - Commissioning of HVAC.
F. Section 232300 - Refrigerant Piping.
G. Section 250800 - Commissioning of Integrated Automation.
H. Section 251500 - Integrated Automation Software.
I. Section 253500 - Integrated Automation Instrumentation and Terminal Devices for HVAC.
J. Section 260583 - Wiring Connections: Power connections to equipment.
K. Section 284400 - Refrigerant Detection and Alarm.

1.03 REFERENCE STANDARDS

A. AHRI 210/240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2023.
B. AHRI 1230 - Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment; 2021.
C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
D. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2022, with Addendum (2024).
E. ASHRAE Std 34 - Designation and Safety Classification of Refrigerants; 2024, with Addendum (2025).

F. ASHRAE Std 90.1 I-P - Energy Standard for Buildings Except Low-Rise Residential Buildings; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. ITS (DIR) - Directory of Listed Products; Current Edition.

H. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

J. UL 1995 - Heating and Cooling Equipment; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittal procedures.

B. Pre-Bid Submittals: For proposed substitute systems/products, as defined in PART 2, and alternate systems/products, as defined above, proposer shall submit all data described in this article, under the terms given for substitutions stated in PART 2.

C. Product Data: Submit manufacturer's standard data sheets showing the following for each item of equipment, marked to correlate to equipment item markings indicated in Contract Documents:
   1. Outdoor Units:
      a. Refrigerant Type and Size of Charge.
      b. Output and Input Cooling Capacity: Btu/h.
      c. Output and Input Heating Capacity: Btu/h.
      d. Operating Temperature Range, Cooling and Heating.
      e. Fan Capacity: Flow in cfm with respective fan curves.
      f. External Static Pressure (ESP): In-wc.
      g. Sound Pressure Level: dB(A).
      h. Electrical Data: Complete including motor size.
      i. Maximum number of indoor units that can be served.
      j. Maximum refrigerant piping run from outdoor unit to indoor unit(s).
      k. Maximum height difference between outdoor unit to Indoor unit(s), both above and below.
   2. Indoor Units:
      a. Output and Input Cooling Capacity: Btu/h.
      b. Output and Input Heating Capacity: Btu/h.
      c. Fan Capacity: Flow in cfm with respective fan curves.
      d. External Static Pressure (ESP): In-wc.
      e. Electrical Data: Complete including motor size.
      f. Maximum Lift of Built-in Condensate Pump.
   3. Control Panels: Complete data of controllers, input-output points, and zones.

D. Shop Drawings: Installation drawings custom-made for this project; include as-designed HVAC layouts, locations of equipment items, refrigerant piping sizes and locations, condensate piping sizes and locations, remote sensing devices, control components, electrical connections, control wiring connections. Include:
   1. Detailed piping diagrams, with branch balancing devices.
   2. Condensate piping routing, size, and pump connections.
   3. Detailed power wiring diagrams.

4. Detailed control wiring diagrams.
5. Locations of required access through fixed construction.
6. Drawings required by manufacturer.

E. Design Data:
1. Provide design calculations showing that system will achieve performance specified.
2. Provide design data with respective calculations for respective climate zone in accordance with ASHRAE Std 90.1 I-P, ASHRAE Std 15, and ASHRAE Std 34.

F. Operating and Maintenance Data:
1. Manufacturer's complete standard instructions for each unit of equipment and control panel.
2. Custom-prepared system operation, troubleshooting, and maintenance instructions and recommendations.
3. Identification of replaceable parts and local source of supply.

G. Warranty: Executed warranty, made out in Owner's name.

1.05 WARRANTY

A. See Section 017800 - Closeout Submittals for additional warranty requirements.

B. Compressors: Provide manufacturer's warranty for 5 years from date of installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Daikin

B. LG Electronics U.S.A., Inc

C. Mitsubishi Electric Trane HVAC US, LLC

D. Or Approved Equal.

2.02 VARIABLE REFRIGERANT FLOW SYSTEM

A. Minimum System Requirements:
1. System Testing, Capacity Rating, and Performance:
a. AHRI 1230 when cooling capacity is equal or greater than 65,000 Btu/h.
b. AHRI 210/240 when cooling capacity is below 65,000 Btu/h.
2. Safety Certification: Bear UL 1995 tested and ITS (DIR) listed certification label.
3. Outdoor Units: Furnish installation and surface support hardware products in accordance with ASCE 7 for wind restraint.
4. Cooling Mode Interior Performance:
a. Daytime Setpoint: 68 degrees F, plus or minus 2 degrees F.
b. Setpoint Range: 57 degrees F to 77 degrees F.
c. Night Setback: 78 degrees F.
d. Interior Relative Humidity: 20 percent, maximum.

B. System Design and Installation Considerations:

1. Conditioned spaces and zones are indicated on drawings.
2. Outside unit locations are indicated on drawings.
3. Required equipment unit capacities are indicated on drawings.
4. Refrigerant piping sizes are not indicated on drawings.
5. Condensate piping to nearest drain is indicated on drawings.
6. Provide calculations showing ASHRAE Std 15 guideline compliance.

2.03 AIR-SOURCE OUTDOOR UNITS

A. Air Conditioning Type:
   1. DX refrigeration unit piped to one or more compatible indoor units either directly or indirectly through one or more intermediate refrigeration branch units.

B. Unit Cabinet:
   1. Capable of being installed with wiring and piping to the left, right, rear or bottom.
   2. Designed to allow side-by-side installation with minimum spacing and vibration isolation.
   3. Weatherproof and corrosion resistant; rust-proofed mild steel panels coated with baked enamel finish.
   4. Sound Pressure Level: 55 dB measured at 3 feet from front of unit.

C. Heat Sink Side:
   1. Condenser Fans:
      a. Provide minimum of 2 fans for each condenser within the outdoor unit.
      b. Minimum External Static Pressure: Factory set at 0.12 in-wc.
      c. Fan Type: Vertical discharging, direct-driven propeller type with variable speed operation using DC-controlled ECM motors mechanically connected using permanently lubricated bearings having whole assembly protected with fan guards.
   2. Condenser Coils:
      a. Hi-X seamless copper tubes expanded into aluminum fins to form mechanical bond; waffle louver fin and rifled bore tube design to ensure high efficiency performance.

D. Refrigeration Side:
   1. Factory assembled and wired with instrumentation, switches, and controller(s) to handle unit specifics with direct coordination of remote controller(s) from indoor unit(s).
   2. Refrigeration Circuit: ECM driven dual scroll compressors, fans, condenser heat sink coil, expansion valves, solenoid valves, distribution headers, capillaries, filters, shutoff valves, oil separators, service ports, and refrigerant regulator.
   3. Refrigerant: R-410a factory charged. Controller to alarm when charge is below capacity.
   4. Variable Volume Control: Modulate compressed refrigerant capacity automatically to maintain constant suction and condensing pressures under varying refrigerant volume required to handle remote loads. Include defrost control.
   5. Provide refrigerant subcooling to ensure the liquid refrigerant does not flash when supplying to use indoor units.
   6. Capable of heating operation at low end of operating range as specified, without additional low ambient controls or auxiliary heat source; during heating operation,

reverse cycle, oil return, or defrost is not permitted due to potential reduction in space temperature.

7. Power Failure Mode: Automatically restarts operation after power failure without loss of programmed settings.
8. Safety Devices: High pressure sensor with cut-out switch, low pressure sensor with cut-out switch, control circuit fuses, crankcase heaters, fusible plug, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, overcurrent protection for the inverter and antirecycling timers.
9. Oil Recovery Cycle: Automatic, occurring 2 hours after start of operation and then every 8 hours of operation; maintain continuous heating during oil return operation.

E. Local Controls:
   1. Include factory-wired instruments, sensors, switches, and safeties for unit control.

F. Power:
   1. Electrical Requirement: 208 to 230 VAC, 3-phase, 60 Hz.
   2. Outdoor Mounted: Provide fused NEMA EN 10250 Type 4X disconnect switch.

2.04 REFRIGERANT PIPING

A. Two-Pipe Run: Provide low-pressure vapor and high-pressure vapor gas pipes for each indoor unit selected for seasonal heating or cooling service.

B. Three-Pipe Run: Provide low-pressure vapor, high-pressure vapor gas, and liquid pipes for each indoor unit selected for off-season heating and cooling changeover service.

C. Refrigerant Flow Balancing: Provide refrigerant piping joints and headers specifically designed to ensure proper refrigerant balance and flow for optimum system capacity and performance; T-style joints are prohibited.

2.05 REFRIGERANT BRANCH UNITS

A. Outdoor unit interface to handle two or more indoor units required to do automatic off-season heating and cooling changeover.

B. Concealed box consisting internally-piped refrigeration loops, subcooling heat exchanger, and other devices coordinated by electronic valves to facilitate off-season load management between outdoor and indoor units.

C. Minimum Requirements:
   1. Control direction of refrigerant flow using electronic expansion valves; use of solenoid valves for changeover and pressure equalization is not permitted due to refrigerant noise; use of multi-port branch selector boxes is not permitted unless spare ports are provided for redundancy.
   2. Provide one electronic expansion valve for each downstream indoor unit served except when multiple indoor units are connected, provide balancing joints in downstream piping to keep total capacity within branch unit capacity.
   3. Energize subcooling heat exchanger during simultaneous heating and cooling service.
   4. Casing: Galvanized steel sheet with flame and heat resistant foamed polyethylene sound and thermal insulation.

5. Refrigerant Connections: Braze type.
6. Condensate Drainage: Provide unit that does not require condensate drainage.

2.06 INDOOR UNITS

A. Manufacturers:

B. Minimum Unit Requirements:
   1. DX Evaporator Coil:
      a. Copper tubes expanded into aluminum fins to form a mechanical bond; waffle louver fin and high heat exchange, rifled bore tube design; factory tested.
      b. 2-, 3-, or 4-row cross fin design with 14 to 17 fins per inch and flare end-connections.
      c. Provide thermistor on liquid and gas lines wired into local controller.
      d. Refrigerant circuits factory-charged with dehydrated air for field charging.
   2. Fan Section:
      a. Variable or three-speed ECM fan with automatic airflow adjustment; external static pressure selectable during commissioning.
      b. Thermally protected, direct-drive motor with statically and dynamically balanced fan blades.
      c. Minimum-adjustable external static pressure 0.32 in-wc; provide for mounting of field-installed ducts.
   3. Local Unit Controls:
      a. Exposed Thermostat: Wall-mounted thermostat wired into controller.
      b. Temperature Control: Return air control using thermistor tied to computerized Proportional-Integral-Derivative (PID) control of superheat.
      c. Temperature Zones:
         1) Single Indoor Unit: Set served space(s) as the local temperature zone.
         2) Multiple Indoor Units: For large zones, group and coordinate related indoor units with served spaces as the local temperature zone with each indoor unit as sub-zone.
   4. Return Air Filter:
      a. Manufacturer's standard, monitored with adjustable static pressure switch.
      b. Provide air filter rack for non-manufacturer's standard filters.
   5. Condensate:
      a. Built-in condensate drain pan with PVC drain connection for drainage.
      b. Units With Built-In Condensate Pumps: Provide condensate safety shutoff and alarm.
      c. Units Without Built-In Condensate Pump: Provide built-in condensate float switch and wiring connections.
   6. Cabinet Insulation: Sound absorbing foamed polystyrene and polyethylene insulation.

C. Ceiling-Recessed Cassette, Indoor Units:
   1. Ceiling mount, 4-way, 2-way, or 1-way supply air flow units with central return air grill, DX coil, tubed drain pan, and built-in controls with thermostat remotely coordinated by outdoor air unit to maintain local air temperature setpoint.
   2. Cabinet Height: Maximum of 10 inches above face of ceiling.
   3. Exposed Housing: White, impact resistant, with washable decoration panel.
   4. Supply Airflow Adjustment:

a. Horizontally and vertically adjustable dampers with electronic actuators.
b. Four-way distribution field-modifiable to 3-way and 2-way airflow.
c. Three auto-swing positions, including standard, draft prevention and ceiling stain prevention.

5. Return Air Filter: Manufacturer's standard.
6. Sound Pressure Range: Between 28 to 33 dB(A) at low speed measured at 5 feet below the unit.
7. Fan: Direct-drive turbo type, with motor output range of 1/16 to 1/8 hp.
8. Condensate Pump: Built-in with minimum lift of 21 inches.
9. Fresh Air Intake: Provide side-mounted outdoor air intake duct connection.

D. Ceiling-Concealed Ducted Indoor Units:
1. Type: Ducted unit with DX coil, tubed drain pan, and built-in controls with thermostat remotely coordinated by outdoor air unit to maintain local air temperature setpoint.
2. Ducted horizontal discharge and side or back-end return; galvanized steel cabinet.
3. Variable or three-speed ECM fan with automatic airflow adjustment; external static pressure selectable during commissioning.
4. Return Air Filter: Manufacturer's standard.
5. Sound Pressure: Measured at low speed at 5 feet below unit.
6. Provide external static pressure switch adjustable for high efficiency filter operation
7. Condensate Pump: Built-in, with lift of 9 inches, minimum.
8. Switchbox accessible from side or bottom.

E. Wall Mounted, Indoor Units:
1. DX coil, tubed drain pan, and built-in controls with thermostat remotely coordinated by outdoor air unit to maintain local air temperature setpoint.
2. Variable or three-speed ECM cross-flow fan with automatic airflow adjustment; external static pressure selectable during commissioning.
3. Return Air Filter: Manufacturer's standard.
4. Provide exposed unit casing with removable front grille; foamed polystyrene and polyethylene sound insulation; wall mounting plate; polystyrene condensate drain pan.
5. Airflow Control: Auto-swing louver that closes automatically when unit stops; five (5) steps of discharge angle, set using remote controller; upon restart, discharge angle defaults to same angle as previous operation.
6. Sound Pressure Range: Measured at low speed at 3.3 feet below and away from unit.
7. Condensate Pump: Built-in, concealed.
8. Condensate Drain Connection: Back, with piping concealed in wall.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that required electrical services have been installed and are in the proper locations prior to starting installation.

B. Verify that condensate piping has been installed and is in the proper location prior to starting installation.

C. Notify Architect if conditions for installation are unsatisfactory.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install refrigerant piping in accordance with equipment manufacturer's instructions.

C. Perform wiring in accordance with NFPA 70, National Electric Code (NEC).

D. Coordinate with installers of systems and equipment connecting to this system.

E. Refrigerant Piping: See Section 232300 with Section 230719 for insulation, and Section 230529 for hangers and supports unless following specific manufacturer recommendations.

F. Connect indoor units to condensate piping.

G. Coordinate BAS, BMS, or Integrated Automation linking between local controller(s) and remote front-end interface; see Section 251500.

H. Install refrigerant leak detection and alarm system in occupied spaces; see Section 284400.

3.03 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements for additional requirements.

B. Provide manufacturer's field representative to inspect installation prior to startup.

3.04 SYSTEM STARTUP

A. Provide manufacturer's field representative to perform system startup.

B. Prepare and start equipment and system in accordance with manufacturer's instructions and recommendations.

C. Adjust equipment for proper operation within manufacturer's published tolerances.

3.05 CLEANING

A. See Section 017000 - Execution and Closeout Requirements for additional requirements.

B. Clean exposed components of dirt, finger marks, and other disfigurements.

3.06 COMMISSIONING

A. See Section 019113 - General Commissioning Requirements for additional requirements.

B. Execute mechanical system commissioning as indicated on Section 230800.

C. Execute BAS, SCADA, or other linked integration automation system commissioning as indicated on Section 250800.

D. Replace components not functioning properly.

3.07 CLOSEOUT ACTIVITIES

A. See Section 017800 - Closeout Submittals for additional submittals.

B. See Section 017900 - Demonstration and Training for additional requirements.

C. Demonstrate proper operation of equipment to Owner's designated representative.

D. Demonstration: Demonstrate operation of system to Owner's personnel.
   1. Use operation and maintenance data as reference during demonstration.
   2. Conduct walking tour of project.
   3. Briefly describe function, operation, and maintenance of each component.

E. Training: Train Owner's personnel on operation and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of two hours of training.
   3. Instructor: Manufacturer's training personnel.
   4. Location: At project site.

3.08 PROTECTION

A. Protect installed components from subsequent construction operations.

B. Replace exposed components broken or otherwise damaged beyond repair.

3.09 MAINTENANCE

A. See Section 017000 - Execution and Closeout Requirements for additional requirements.

END OF SECTION 238129

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2024).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2023.

C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).

D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).

E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2024.

F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2020.

G. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

H. NECA 120 - Standard for Installing Armored Cable (AC) and Type Metal-Clad (MC) Cable; 2018.

I. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.

J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

L. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

M. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

N. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

O. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

P. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

Q. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Single conductor building wire.

B. Metal-clad cable.

C. Wire and cable for 600 volts and less.

D. Wiring connectors.
E. Electrical tape.
F. Heat shrink tubing.
G. Wire pulling lubricant.

1.03 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.
B. Section 260513 - Medium-Voltage Cable: Cables and terminations for systems 601 V through 35,000 V.
C. Section 260526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
D. Section 283100 - Fire Detection and Alarm: Fire alarm system conductors and cables.
E. Section 312316 - Excavation.
F. Section 312316.13 - Trenching: Excavating, bedding, and backfilling.

1.04 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2001 (Reapproved 2007).
B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.
C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010.
D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2009).
E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2010.
F. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2008.
G. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
H. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); National Electrical Contractors Association; 2006.
I. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association; 2009 (ANSI/NEMA WC 70/ICEA S-95-658).
J. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2009.
K. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

L. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

M. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

N. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

O. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

P. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

Q. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

R. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
   3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

C. Product Data: Provide for each cable assembly type.

D. Test Reports: Indicate procedures and values obtained.

E. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors. Include proposed modifications to raceways, boxes, wiring gutters, enclosures, etc. to accommodate substituted conductors.

F. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

G. Project Record Documents: Record actual locations of components and circuits.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees Fahrenheit, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience and with service facilities within 100 miles of Project.

C. Products: Furnish products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 PRODUCTS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

C. Nonmetallic-sheathed cable is not permitted.

D. Underground feeder and branch-circuit cable is not permitted.

E. Service entrance cable is not permitted.

F. Armored cable is not permitted.

G. Metal-clad cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
         1) Maximum Length: 6 feet.
      b. Where concealed in hollow stud walls, above accessible ceilings, and under raised floors for branch circuits up to 20 A.
         1) Exception: Provide single conductor building wire in raceway for circuit homerun from first outlet to panelboard.
   2. In addition to other applicable restrictions, may not be used:
      a. Where not approved for use by the authority having jurisdiction.
      b. Where exposed to view.
      c. Where exposed to damage.
      d. For damp, wet, or corrosive locations.
      e. For isolated ground circuits, unless provided with an additional isolated/insulated grounding conductor.

H. Concealed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.

I. Exposed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.

J. Above Accessible Ceilings: Use only building wire with Type THHN insulation in raceway.

K. K.Wet or Damp Interior Locations: Use only building wire with Type THWN insulation in raceway.

L. Exterior Locations: Use only building wire with Type THWN insulation in raceway.

M. Underground Installations: Use only building wire with Type THWN insulation in raceway.

N. Use solid conductor for feeders and branch circuits 10 AWG and smaller.

O. Use stranded conductors for control circuits.

P. Use conductor not smaller than 12 AWG for power and lighting circuits.

Q. Use conductor not smaller than 18 AWG for control circuits.

R. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.

S. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.

2.02 CONDUCTOR AND CABLE MANUFACTURERS

A. Cerro Wire LLC: www.cerrowire.com.

B. Southwire Company: www.southwire.com.

C. Substitutions: See Section 016000 - Product Requirements.

2.03 ALL CONDUCTORS AND CABLES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.

C. Provide new conductors and cables manufactured not more than one year prior to installation.

D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

E. Comply with NEMA WC 70.

F. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

G. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

H. Conductors for Grounding and Bonding: Also comply with Section 260526.

I. IConductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.

J. Conductor Material:
   1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
   2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
   3. Tinned Copper Conductors: Comply with ASTM B33.

K. Minimum Conductor Size:
   1. Branch Circuits: 12 AWG.
      a. Exceptions:
         1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
         2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
         3) 20 A, 277 V circuits longer than 200 feet: 10 AWG, for voltage drop.
   2. Control Circuits: 14 AWG.

L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

M. M. Conductor Color Coding:
   1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
   2. Color Coding Method: Integrally colored insulation.
      a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
   3. Color Code:
      a. 480Y/277 V, 3 Phase, 4 Wire System:
         1) Phase A: Brown.
         2) Phase B: Orange.
         3) Phase C: Yellow.
         4) Neutral/Grounded: Gray.
      b. 208Y/120 V, 3 Phase, 4 Wire System:
         1) Phase A: Black.
         2) Phase B: Red.
         3) Phase C: Blue.
         4) Neutral/Grounded: White.
      c. Equipment Ground, All Systems: Green.
      d. Isolated Ground, All Systems: Green with yellow stripe.
      e. Travelers for 3-Way and 4-Way Switching: Pink.
      f. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.
      g. For control circuits, comply with manufacturer's recommended color code.

2.04 2.4 SINGLE CONDUCTOR BUILDING WIRE

A. Manufacturers:
   1. Copper Building Wire:
      a. Cerro Wire LLC: www.cerrowire.com.
      b. Encore Wire Corporation: www.encorewire.com.

c. Southwire Company: www.southwire.com.
d. Substitutions: See Section 016000 - Product Requirements.

B. Description: Single conductor insulated wire.

C. Conductor Stranding:
1. Feeders and Branch Circuits:
a. Size 10 AWG and Smaller: Solid.
b. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation:
1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.
a. Size 4 AWG and Larger: Type XHHW-2.
b. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 194 degrees Fahrenheit; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.05 METAL-CLAD CABLE

A. Manufacturers:
1. AFC Cable Systems Inc: www.afcweb.com.
2. Encore Wire Corporation: www.encorewire.com.
3. Southwire Company: www.southwire.com.
4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

C. Conductor Stranding:
1. Size 10 AWG and Smaller: Solid.
2. Size 8 AWG and Larger: Stranded.

D. Insulation Voltage Rating: 600 V.

E. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.

F. Provide dedicated neutral conductor for each phase conductor where indicated or required.

G. Grounding: Full-size integral equipment grounding conductor.

H. Armor: Steel, interlocked tape.

2.06 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Connectors for Grounding and Bonding: Comply with Section 260526.

C. Wiring Connectors for Splices and Taps:
1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.

2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.

D. Wiring Connectors for Terminations:
   1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
   2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
   3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
   4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.
   5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.

E. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

F. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.

G. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees Fahrenheit for standard applications and 302 degrees Fahrenheit for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
   1. Manufacturers:
      a. 3M: www.3m.com.
      b. Ideal Industries, Inc: www.idealindustries.com.
      c. NSI Industries LLC: www.nsiindustries.com.
      d. Substitutions: See Section 016000 - Product Requirements.

H. Mechanical Connectors: Provide bolted type or set-screw type.
   1. Manufacturers:
      a. Burndy: www.burndy.com.
      b. Ilsco: www.ilsco.com.
      c. Thomas & Betts Corporation: www.tnb.com.
      d. Substitutions: See Section 016000 - Product Requirements.

I. Compression Connectors: Provide circumferential type or hex type crimp configuration.
   1. Manufacturers:
      a. Burndy: www.burndy.com.
      b. Ilsco: www.ilsco.com.
      c. Thomas & Betts Corporation: www.tnb.com.
      d. Substitutions: See Section 016000 - Product Requirements.

2.07 WIRING ACCESSORIES

A. Electrical Tape:
   1. Manufacturers:
      a. 3M: www.3m.com.
      b. Plymouth Rubber Europa: www.plymouthrubber.com.

c. Substitutions: See Section 016000 - Product Requirements.

2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
4. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
5. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
6. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil; suitable for continuous temperature environment up to 221 degrees F.
7. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.
   1. Manufacturers:
      a. 3M: www.3m.com.
      b. Burndy: www.burndy.com.
      c. Thomas & Betts Corporation: www.tnb.com.
      d. Substitutions: See Section 016000 - Product Requirements.

C. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
   1. Manufacturers:
      a. 3M: www.3m.com.
      b. American Polywater Corporation: www.polywater.com.
      c. Ideal Industries, Inc: www.idealindustries.com.
      d. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that field measurements are as shown on the drawings.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated and routing is not shown, determine exact routing required.
   3. Arrange circuiting to minimize splices.
   4. Include circuit lengths required to install connected devices within 10 ft of location shown.
   5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
   6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
   7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is permitted, under the following conditions:
      a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
      b. Increase size of conductors as required to account for ampacity derating.
      c. Size raceways, boxes, etc. to accommodate conductors.
   8. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
   9. Provide oversized neutral/grounded conductors where indicated and as specified below.
      a. Provide 200 percent rated neutral for feeders fed from K-rated transformers.
      b. Provide 200 percent rated neutral for feeders serving panelboards with 200 percent rated neutral bus.

B. Install products in accordance with manufacturer's instructions.

C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

D. Install metal-clad cable (Type MC) in accordance with NECA 120.

E. Installation in Raceway:
   1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
   2. Pull all conductors and cables together into raceway at same time.
   3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
   4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
   1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
   2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.

H. Terminate cables using suitable fittings.
   1. Metal-Clad Cable (Type MC):
      a. Use listed fittings.
      b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

I. Install conductors with a minimum of 12 inches of slack at each outlet.

J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

K. Make wiring connections using specified wiring connectors.
   1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
   2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
   3. Do not remove conductor strands to facilitate insertion into connector.
   4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
   5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
   1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
      b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
   2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.

a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.

3. Wet Locations: Use heat shrink tubing.

M. Insulate ends of spare conductors using vinyl insulating electrical tape.

N. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

P. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

A. Perform inspection, testing, and adjusting in accordance with Section 014000.

B. Inspect and test in accordance with NETA STD ATS, except Section 4.

C. Perform inspections and tests listed in NETA STD ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.

1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. NFPA 780 - Standard for the Installation of Lightning Protection Systems; 2023.

F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Ground bars.

D. Ground rod electrodes.

E. Grounding and bonding components.

1.03 RELATED REQUIREMENTS

A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.

B. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

C. Section 033000 - Cast-in-Place Concrete.

1.04 1.3 REFERENCE STANDARDS

A. IEEE 81 - Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System; 1983.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; National Electrical Manufacturers Association; 2007.

D. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2009.

E. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. NFPA 780 - Standard for the Installation of Lightning Protection Systems; National Fire Protection Association; 2011.

G. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.06 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 5 ohms.

1.07 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Shop Drawings:
   1. Indicate proposed arrangement for signal reference grids. Include locations of items to be bonded and methods of connection.

D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Field quality control test reports.

F. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.08 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Do not use products for applications other than as permitted by NFPA 70 and product listing.

B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

D. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
   2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
   3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested according to IEEE 81 using "point-to-point" methods.

E. Grounding Electrode System:
   1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
      a. Provide continuous grounding electrode conductors without splice or joint.
      b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
   2. Metal Underground Water Pipe(s):
      a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
      b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
      c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
   3. Metal Building or Structure Frame:
      a. Provide connection to metal building or structure frame effectively grounded in accordance with NFPA 70 at nearest accessible location.

4. Ground Rod Electrode(s):
    a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
    b. Space electrodes not less than 10 feet from each other and any other ground electrode.
    c. Where location is not indicated, locate electrode(s) at least 5 feet outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.
5. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
6. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
    a. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
    b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
    c. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

F. Service-Supplied System Grounding:
1. For each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure.
2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-installed. Do not make any other connections between neutral (grounded) conductors and ground on load side of service disconnect.

G. Grounding for Separate Building or Structure Supplied by Feeder(s) or Branch Circuits:
1. Provide grounding electrode system for each separate building or structure.
2. Provide equipment grounding conductor routed with supply conductors.
3. For each disconnecting means, provide grounding electrode conductor to connect equipment ground bus to grounding electrode system.
4. Do not make any connections and remove any factory-installed jumpers between neutral (grounded) conductors and ground.

H. Separately Derived System Grounding:
1. Separately derived systems include, but are not limited to:
    a. Transformers (except autotransformers such as buck-boost transformers).
    b. Uninterruptible power supplies (UPS), when configured as separately derived systems.
    c. Generators, when neutral is switched in the transfer switch.
2. Provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Unless otherwise indicated, make connection at neutral (grounded) bus in source enclosure.
3. Provide bonding jumper to connect derived system grounded conductor to nearest metal building frame and nearest metal water piping in the area served by the derived system, where not already used as a grounding electrode for the

derived system. Make connection at same location as grounding electrode conductor connection.

4. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections between neutral (grounded) conductors and ground on load side of separately derived system disconnect.
5. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first disconnecting means.

I. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
   a. Metal gas piping.

J. Communications Systems Grounding and Bonding:
1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.
2. Provide bonding jumper in raceway from intersystem bonding termination to each communications room or backboard and provide ground bar for termination.
   a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
   b. Raceway Size: 3/4 inch unless otherwise indicated or required.
   c. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
   d. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
1. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.

2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 260519:
   1. Use insulated copper conductors unless otherwise indicated.
      a. Exceptions:
         1) Use bare copper conductors where installed underground in direct contact with earth.
         2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
   1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
   2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
   3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
   4. Manufacturers - Mechanical and Compression Connectors:
      a. Burndy: www.burndy.com.
      b. Harger Lightning & Grounding: www.harger.com.
      c. Thomas & Betts Corporation: www.tnb.com.
      d. Substitutions: See Section 016000 - Product Requirements.

D. Ground Bars:
   1. Description: Copper rectangular ground bars with mounting brackets and insulators.
   2. Size: As indicated.
   3. Holes for Connections: As indicated or as required for connections to be made.
   4. Manufacturers:
      a. Erico International Corporation: www.erico.com.
      b. Harger Lightning & Grounding: www.harger.com.
      c. ThermOweld, a brand of Continental Industries, Inc: www.thermoweld.com.
      d. Substitutions: See Section 016000 - Product Requirements.

E. Ground Rod Electrodes:
   1. Comply with NEMA GR 1.
   2. Material: Copper-bonded (copper-clad) steel.
   3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.
   4. Manufacturers:
      a. Erico International Corporation: www.erico.com.
      b. Galvan Industries, Inc: www.galvanelectrical.com.
      c. Harger Lightning & Grounding: www.harger.com.
      d. Substitutions: See Section 016000 - Product Requirements.

2.03 PRODUCTS

A. Rod Electrodes: Copper.
   1. Diameter: 3/4 inch.
   2. Length: 10 feet.

B. Foundation Electrodes: 2/0 AWG.

2.04 CONNECTORS AND ACCESSORIES

A. Mechanical Connectors: Bronze.

B. Exothermic Connections:

C. Wire: Stranded copper.

D. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as shown on the drawings.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.

C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches deep in accordance with NFPA 70 or provide ground plates.
   1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches below finished grade.

D. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
   3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
   4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

E. Identify grounding and bonding system components in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

A. Perform inspection in accordance with Section 014000.

B. Inspect and test in accordance with NETA STD ATS except Section 4.

C. Perform inspections and tests listed in NETA STD ATS, Section 7.13.

D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

D. MFMA-4 - Metal Framing Standards Publication; 2004.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Support and attachment components for equipment, conduit, cable, boxes, and other electrical work.

1.03 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Concrete equipment pads.

B. Section 260534 - Conduit: Additional support and attachment requirements for conduits.

C. Section 260537 - Boxes: Additional support and attachment requirements for boxes.

D. Section 265100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

E. Conduit and equipment supports.

F. Anchors and fasteners.

1.04 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2011.

D. MFMA-4 - Metal Framing Standards Publication; Metal Framing Manufacturers Association; 2004.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
   2. Coordinate the work with other trades to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
   4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 033000.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, non-penetrating rooftop supports, and post-installed concrete and masonry anchors.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.07 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Comply with applicable building code.

C. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
   2. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated, where applicable.
   3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor with accordance to local AHJ. Include consideration for vibration, equipment operation, and shock loads where applicable.
   4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   5. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
   6. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
      a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
      c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
      d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
   1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   2. Conduit Clamps: Bolted type unless otherwise indicated.
   3. Manufacturers:
      a. Cooper Crouse-Hinds, a division of Cooper Industries: www.cooperindustries.com.
      b. Erico International Corporation: www.erico.com.
      c. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
      d. Thomas & Betts Corporation: www.tnb.com.
      e. Substitutions: See Section 016000 - Product Requirements.

C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
   1. Manufacturers:
      a. Cooper Crouse-Hinds, a division of Cooper Industries: www.cooperindustries.com.
      b. Erico International Corporation: www.erico.com.
      c. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
      d. Thomas & Betts Corporation: www.tnb.com.
      e. Substitutions: See Section 016000 - Product Requirements.

D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
   1. Comply with MFMA-4.
   2. Channel (Strut) Used as Raceway (only where specifically indicated): Listed and labeled as complying with UL 5B.
   3. Channel Material:
      a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
      b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
   4. Minimum Channel Thickness: 12 gauge.
   5. Minimum Channel Dimensions: 1-5/8 inch width by 13/16 inch height.
   6. Manufacturers:
      a. Cooper B-Line, a division of Cooper Industries: www.cooperindustries.com.
      b. Thomas & Betts Corporation: www.tnb.com.
      c. Unistrut, a brand of Atkore International Inc: www.unistrut.com.
      d. Substitutions: See Section 016000 - Product Requirements.

E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
   1. Minimum Size, Unless Otherwise Indicated or Required:
      a. aEquipment Supports: 1/2 inch diameter.
      b. Single Conduit up to 1 inch trade size: 1/4 inch diameter.
      c. Single Conduit larger than 1 inch trade size: 3/8 inch diameter.
      d. Trapeze Support for Multiple Conduits: 3/8 inch diameter.
      e. Outlet Boxes: 1/4 inch diameter.
      f. Luminaires: 1/4 inch diameter.

F. Anchors and Fasteners:
   1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
   2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
   3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
   4. Hollow Masonry: Use toggle bolts.
   5. Hollow Stud Walls: Use toggle bolts.
   6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
   7. Sheet Metal: Use sheet metal screws.
   8. Plastic and lead anchors are not permitted.
   9. 9.Powder-actuated fasteners are not permitted.
   10. Hammer-driven anchors and fasteners are not permitted.

11. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    a. Comply with MFMA-4.
    b. Channel Material: Use galvanized steel.
    c. Minimum Channel Thickness: 12 gauge.
    d. Manufacturer: Same as manufacturer of metal channel (strut) framing system.
12. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.
13. Manufacturers - Mechanical Anchors:
    a. Hilti, Inc: www.us.hilti.com.
    b. ITW Red Head, a division of Illinois Tool Works, Inc: www.itwredhead.com.
    c. Powers Fasteners, Inc: www.powers.com.
    d. Simpson Strong-Tie Company Inc: www.strongtie.com.
    e. Substitutions: See Section 016000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.

C. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

D. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

E. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

F. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

G. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

H. Equipment Support and Attachment:
    1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
    2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.

3. 3Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

I. Conduit Support and Attachment: Also comply with Section 260534.

J. Box Support and Attachment: Also comply with Section 260537.

K. Interior Luminaire Support and Attachment: Also comply with Section 265100.

L. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

M. Secure fasteners according to manufacturer's recommended torque settings.

N. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION 260529

SECTION 260534 - CONDUIT

ENMTEPART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2020.

B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.

C. ANSI C80.5 - American National Standard for Electrical Rigid Metal Conduit - Aluminum (ERMC-A); 2025.

D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.

E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.

F. NECA 102 - Standard for Installing Aluminum Rigid Metal Conduit; 2004.

G. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2025.

H. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

I. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2020.

J. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2021.

K. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

L. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.

M. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

N. UL 6A - Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.

O. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.

P. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

Q. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

R. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

S. UL 1660 - Liquid-Tight Flexible Nonmetallic Conduit; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Galvanized steel rigid metal conduit (RMC).

B. Aluminum rigid metal conduit (RMC).

C. Flexible metal conduit (FMC).
D. Liquidtight flexible metal conduit (LFMC).
E. Electrical metallic tubing (EMT).
F. Rigid polyvinyl chloride (PVC) conduit.
G. Liquidtight flexible nonmetallic conduit (LFNC).
H. Conduit fittings.
I. Accessories.
J. Conduit, fittings and conduit bodies.

1.03 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Concrete encasement of conduits.
B. Section 078400 - Firestopping.
C. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC) and armored cable (Type AC), including uses permitted.
D. Section 260526 - Grounding and Bonding for Electrical Systems.
   1. Includes additional requirements for fittings for grounding and bonding.
E. Section 260529 - Hangers and Supports for Electrical Systems.
F. Section 260535 - Surface Raceways.
G. Section 260537 - Boxes.
H. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
I. Section 271005 - Structured Cabling for Voice and Data - Inside-Plant: Additional requirements for communications systems conduits.

1.04 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT); 2005.
C. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); National Electrical Contractors Association; 2006.
E. NECA 102 - Standard for Installing Aluminum Rigid Metal Conduit; National Electrical Contractors Association; 2004.
F. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); National Electrical Contractors Association; 2003.
G. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).

H. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; National Electrical Manufacturers Association; 2003.

I. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; National Electrical Manufacturers Association; 2004.

J. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.

L. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

M. UL 6A - Electrical Rigid Metal Conduit-Aluminum, Red Brass, and Stainless Steel; Current Edition, Including All Revisions.

N. UL 360 - Liquid-Tight Flexible Steel Conduit; Current Edition, Including All Revisions.

O. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

P. UL 651 - Schedule 40 and 80 Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.

Q. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

R. UL 1660 - Liquid-Tight Flexible Nonmetallic Conduit; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
   2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
   3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
   4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
   5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

C. Shop Drawings:

1. Include proposed locations of roof penetrations and proposed methods for sealing.

D. Project Record Documents: Record actual routing for conduits installed underground and conduits 2 inch trade size and larger.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

B. Accept conduit on site. Inspect for damage.

C. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

D. Protect PVC conduit from sunlight.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.

C. Underground:
   1. Under Slab on Grade: Use rigid PVC conduit.
   2. Exterior, Direct-Buried: Use rigid PVC conduit.
   3. Exterior, Embedded Within Concrete: Use rigid PVC conduit.
   4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.
   5. Where rigid polyvinyl (PVC) conduit larger than 2 inch trade size is provided, use galvanized steel rigid metal conduit elbows for bends.

D. Embedded Within Concrete:
   1. Within Slab on Grade: Not permitted.
   2. Within Slab Above Ground: Not permitted.
   3. Within Concrete Walls Above Ground: Use galvanized steel rigid metal conduit.
   4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from concrete.

5. Where electrical metallic tubing (EMT) emerges from concrete into salt air, use corrosion protection tape to provide supplementary corrosion protection for a minimum of 4 inches on either side of where conduit emerges.

E. Concealed Within Masonry Walls: Use electrical metallic tubing (EMT).

F. Concealed Within Hollow Stud Walls: Use electrical metallic tubing (EMT).

G. Concealed Above Accessible Ceilings: Use electrical metallic tubing (EMT).

H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit.

I. Exposed, Interior, Not Subject to Physical Damage: Use electrical metallic tubing (EMT).

J. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
   1. Locations subject to physical damage include, but are not limited to:
      a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
      b. Where exposed below 20 feet in warehouse areas.

K. Exposed, Exterior: Use galvanized steel rigid metal conduit.

L. Concealed, Exterior, Not Embedded in Concrete or in Contact With Earth: Use galvanized steel rigid metal conduit.

M. Corrosive Locations Above Ground: Use aluminum rigid metal conduit.
   1. Corrosive locations include, but are not limited to:
      a. Cooling towers.

N. Hazardous (Classified) Locations: Use galvanized steel rigid metal conduit.

O. OConnections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
   1. Maximum Length: 6 feet.

P. Connections to Vibrating Equipment:
   1. Dry Locations: Use flexible metal conduit.
   2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
   3. Maximum Length: 6 feet unless otherwise indicated.
   4. Vibrating equipment includes, but is not limited to:
      a. Transformers.
      b. Motors.

Q. Fished in Existing Walls, Where Necessary: Use flexible metal conduit.

2.02 PRODUCTS

A. Electrical Service Conduits: Also comply with Section 262701.

B. Communications Systems Conduits: Also comply with Section 271005.

C. Fittings for Grounding and Bonding: Also comply with Section 260526.

D. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.

E. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.

F. Minimum Conduit Size, Unless Otherwise Indicated:
   1. Branch Circuits: 3/4 inch trade size.
   2. Branch Circuit Homeruns: 3/4 inch trade size.
   3. Control Circuits: 1/2 inch trade size.
   4. Flexible Connections to Luminaires: 1/2 inch trade size.
   5. Underground, Interior: 3/4 inch trade size.
   6. Underground, Exterior: 1 inch trade size.

G. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedeg.com.
   2. Republic Conduit: www.republic-conduit.com.
   3. Wheatland Tube Company: www.wheatland.com.
   4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings Inc: www.bptfittings.com.
      b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
      c. Thomas & Betts Corporation: www.tnb.com.
      d. Substitutions: See Section 016000 - Product Requirements.
   2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   3. Material: Use steel or malleable iron.
      a. Do not use die cast zinc fittings.
   4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 ALUMINUM RIGID METAL CONDUIT (RMC)

A. Manufacturers:
   1. Allied Tube & Conduit: www.alliedeg.com.
   2. Republic Conduit: www.republic-conduit.com.
   3. Wheatland Tube Company: www.wheatland.com.
   4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type RMC aluminum rigid metal conduit complying with ANSI C80.5 and listed and labeled as complying with UL 6A.

C. Fittings:
   1. Manufacturers:
      a. Bridgeport Fittings Inc: www.bptfittings.com.
      b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.

c. Thomas & Betts Corporation: www.tnb.com.
d. Substitutions: See Section 016000 - Product Requirements.

2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use aluminum.
4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.05 FLEXIBLE METAL CONDUIT (FMC)

A. Manufacturers:
1. AFC Cable Systems, Inc: www.afcweb.com.
2. Electri-Flex Company: www.electriflex.com.
3. International Metal Hose: www.metalhose.com.
4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com.
b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
c. Thomas & Betts Corporation: www.tnb.com.
d. Substitutions: See Section 016000 - Product Requirements.
2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
a. Do not use die cast zinc fittings.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Manufacturers:
1. AFC Cable Systems, Inc: www.afcweb.com.
2. Electri-Flex Company: www.electriflex.com.
3. International Metal Hose: www.metalhose.com.
4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

C. Fittings:
1. Manufacturers:
a. Bridgeport Fittings Inc: www.bptfittings.com.
b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
c. Thomas & Betts Corporation: www.tnb.com.
d. Substitutions: See Section 016000 - Product Requirements.

2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
    a. Do not use die cast zinc fittings.

2.07 ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:
    1. Allied Tube & Conduit: www.alliedeg.com.
    2. Republic Conduit: www.republic-conduit.com.
    3. Picoma; http://www.picoma.com.
    4. Wheatland Tube Company: www.wheatland.com.
    5. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Fittings:
    1. Manufacturers:
        a. Bridgeport Fittings Inc: www.bptfittings.com.
        b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com.
        c. Thomas & Betts Corporation: www.tnb.com.
        d. Substitutions: See Section 016000 - Product Requirements.
    2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
    3. Material: Use steel or malleable iron.
        a. Do not use die cast zinc fittings.
    4. Connectors and Couplings: Use compression (gland) type.
        a. Do not use indenter type connectors and couplings.

2.08 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

A. Manufacturers:
    1. Cantex Inc: www.cantexinc.com.
    2. Carlon, a brand of Thomas & Betts Corporation: www.carlon.com.
    3. JM Eagle: www.jmeagle.com.
    4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 194 degrees Fahrenheit.

C. Fittings:
    1. Manufacturer: Same as manufacturer of conduit to be connected.
    2. Description: Fittings complying with NEMA TC 3 and listed and labeled as complying with UL 651; material to match conduit.

2.09 LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (LFNC)

A. Manufacturers:
   1. AFC Cable Systems, Inc: www.afcweb.com.
   2. Electri-Flex Company: www.electriflex.com.
   3. International Metal Hose: www.metalhose.com.
   4. Substitutions: See Section 016000 - Product Requirements.

B. Description: NFPA 70, Type LFNC liquidtight flexible nonmetallic conduit listed and labeled as complying with UL 1660.

C. Fittings:
   1. Manufacturer: Same as manufacturer of conduit to be connected.
   2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B; suitable for the type of conduit to be connected.

2.10 ACCESSORIES

A. Corrosion Protection Tape: PVC-based, minimum thickness of 20 mil.

B. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.

C. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.

D. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.

E. Sealing Compound for Sealing Fittings: Listed for use with the particular fittings to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. A. Verify that field measurements are as shown on drawings.

B. B. Verify that mounting surfaces are ready to receive conduits.

C. C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.

C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.

D. Install aluminum rigid metal conduit (RMC) in accordance with NECA 102.

E. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.

F. Install liquidtight flexible nonmetallic conduit (LFNC) in accordance with NECA 111.

G. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated and routing is not shown, determine exact routing required.

3. Conceal all conduits unless specifically indicated to be exposed.
4. Conduits in the following areas may be exposed, unless otherwise indicated:
   a. Electrical rooms.
   b. Mechanical equipment rooms.
   c. Within joists in areas with no ceiling.
5. Unless otherwise approved, do not route conduits exposed:
   a. Across floors.
   b. Across roofs.
   c. Across top of parapet walls.
   d. Across building exterior surfaces.
6. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
7. Arrange conduit to maintain adequate headroom, clearances, and access.
8. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
9. Arrange conduit to provide no more than 150 feet between pull points.
10. Route conduits above water and drain piping where possible.
11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
12. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
13. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
    a. Heaters.
    b. Hot water piping.
    c. Flues.
14. Group parallel conduits in the same area together on a common rack.

H. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
4. Use conduit strap to support single surface-mounted conduit.
   a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
8. Use of spring steel conduit clips for support of conduits is not permitted.
9. Use of wire for support of conduits is not permitted.

10. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with the most stringent requirements.

I. Connections and Terminations:
   1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
   2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
   3. Use suitable adapters where required to transition from one type of conduit to another.
   4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
   5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
   6. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
   7. Secure joints and connections to provide maximum mechanical strength and electrical continuity.

J. Penetrations:
   1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
   2. Make penetrations perpendicular to surfaces unless otherwise indicated.
   3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
   4. Conceal bends for conduit risers emerging above ground.
   5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
   6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
   7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
   8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

K. Underground Installation:
   1. Provide trenching and backfilling in accordance with Sections 312316 and 31 2323.
   2. Minimum Cover, Unless Otherwise Indicated or Required:
      a. Underground, Exterior: 24 inches.
      b. Under Slab on Grade: 12 inches to bottom of slab.
   3. Provide underground warning tape in accordance with Section 260553 along entire conduit length.

L. Concrete Encasement: Where conduits not otherwise embedded within concrete are indicated to be concrete-encased, provide concrete in accordance with Section 033000 with minimum concrete cover of 3 inches on all sides unless otherwise indicated.

M. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
   1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
   2. Where conduits are subject to earth movement by settlement or frost.

N. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
   1. Where conduits pass from outdoors into conditioned interior spaces.
   2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.
   3. Where conduits penetrate coolers or freezers.

O. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.

P. Provide grounding and bonding in accordance with Section 260526.

3.03 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for additional requirements.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective conduits.

END OF SECTION 260534

SECTION 260536 - CABLE TRAYS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2023.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.02 SECTION INCLUDES

A. Cable trays and accessories.

B. Firestopping within (not around) cable trays.

1.03 RELATED REQUIREMENTS

A. Section 078400 - Firestopping: Firestopping around cable trays.

B. Section 260526 - Grounding and Bonding for Electrical Systems.

C. Section 260529 - Hangers and Supports for Electrical Systems.

1.04 1.REFERENCES

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for fittings and accessories.

C. Shop Drawings: Indicate tray type, dimensions, support points, and finishes.

D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Project Record Documents: Record actual routing of cable tray and locations of supports.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.

C. Products: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. CabloFil.

B. EZ Tray

C. Or Approved Equal.

D. Substitutions: See Section 016000 - Product Requirements.

2.02 BASKET-TYPE TRAY

A. Description: Continuous, rigid, welded steel wire mesh cable management system.
   1. Mesh System: Permits continuous ventilation of cables and maximum dissipation of heat.
   2. Safety Edge: Continuous safety edge T-welded wire lip.
   3. Wire Mesh: Welded at all intersections.
   4. UL Classification: Straight sections 2 x 8, 12, and 18 inches, UL classified.
   5. Material: Carbon steel wire, ASTM A 510, Grade 1008. Wire welded, bent, and surface treated after manufacture.
   6. Finish for Carbon Steel Wire:
      a. Finish applied after welding and bending of mesh.
         1) Electro-Plated Zinc Galvanizing: ASTM B 633, Type III, SC-1.
   7. Nominal Dimensions:
      a. Mesh: 2 x 4 inches (50 x 100 mm).
      b. Straight Section Lengths: 80 inches and 118 inches.
      c. Width: 18 inches.
      d. Depth: 4 inches.
      e. Wire Diameter: 0.177 inch, minimum.
   8. Fittings:
      a. Field fabricated in accordance with manufacturer's instructions from straight sections.

b. Above ceiling installation:
1) Center Hangar, provide 3/8” threaded rod and associated hardware to structure.
2) Fasteners: Not required.

9. Hardware: Hardware, including splice connectors and support components furnished by manufacturer.

B. ACCESSORIES:
1. Shielding Divider Strips: Provide divider strips to follow contour of cable tray run for shielding to run data and sound system cables in same tray. Pre-galvanized steel, 2 x 1-1/2 inches.
2. Cable Drop Outs: Provide drop out accessory at each location on the basket tray where cables exit the tray to enter the room or space served by the cables. Tie wrap cables to drop out assembly. Use “Velcro” type tie wraps.
3. Grounding: Grounding lugs for attachment on tray of continuous ground conductor fixing system.
4. Tees and Level Changes: Provide all necessary hardware as recommended by manufacturer for the formation of 90 degree tees and level changes.

C. PART 3 - EXECUTION
1. EXAMINATION:
a. Exam areas to receive cable management system. Notify the Engineer of conditions that would adversely affect the installation or subsequent utilization of the system. Do not proceed with installation until unsatisfactory conditions are corrected.
2. INSTALLATION:
a. Install cable management system at locations indicated on the drawings and in accordance with manufacturer's instructions.
b. Load Span Criteria: Install and support cable management system in accordance with span load criteria of L/240.
c. Cutting:
1) Cut wires in accordance with manufacturer's instructions.
2) Cut wires with side action bolt cutters to ensure integrity of galvanic protective layer.
3) Cut each wire with 1 clean cut to eliminate grinding or touch-up.
4) Install cable management system using hardware, splice connectors, support components, and accessories furnished by manufacturer.
5) The Contractor is responsible for coordination with other trades. Coordinate with HVAC and Plumbing Contractors prior to hanging tray.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

3.02 INSTALLATION

A. Support trays in accordance with Section 260529. Provide supports at each connection point, at the end of each run, and at other points to maintain spacing between supports of ____ ft maximum.

B. Use expansion connectors where required.

C. Provide firestopping under provisions of Section 078400 to sustain ratings when passing cable tray through fire-rated elements.

D. Ground and bond cable tray under provisions of Section 260526.
   1. Provide continuity between tray components.
   2. Provide 2 AWG bare copper equipment grounding conductor through entire length of tray; bond to each component.
   3. Connections to tray may be made using mechanical or exothermic connectors.

E. Install warning signs at 50 feet centers along cable tray, located to be visible.

END OF SECTION 260536

SECTION 260537 - BOXES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).
F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
I. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.
J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.
C. Pull and junction boxes.

1.03 RELATED REQUIREMENTS

A. Section 078400 - Firestopping.
B. Section 083100 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
C. Section 260526 - Grounding and Bonding for Electrical Systems.
D. Section 260529 - Hangers and Supports for Electrical Systems.
E. Section 262726 - Wiring Devices:
    1. Wall plates.
    2. Floor box service fittings.

1.04 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; National Electrical Contractors Association; 2010.

C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2012 (ANSI/NEMA FB 1).

D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2008 (Revised 2010) (ANSI/NEMA OS 1).

E. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.

F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

H. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

I. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
   4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
   5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
   6. Coordinate the work with other trades to preserve insulation integrity.
   7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
   8. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for outlet and device boxes, junction and pull boxes, floor boxes, and underground handhole enclosures.

C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground handhole enclosures.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 016000 - Product Requirements, for additional provisions.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:
   1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
   2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
   3. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
   4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
   5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
   1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
   2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
   3. Use cast iron boxes or cast aluminum boxes where exposed galvanized steel rigid metal conduit, or exposed intermediate metal conduit (IMC) is used.

4. Use suitable concrete type boxes where flush-mounted in concrete.
5. Use suitable masonry type boxes where flush-mounted in masonry walls.
6. Use raised covers suitable for the type of wall construction and device configuration where required.
7. Use shallow boxes where required by the type of wall construction.
8. Do not use "through-wall" boxes designed for access from both sides of wall.
9. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
10. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
11. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
12. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
13. Minimum Box Size, Unless Otherwise Indicated:
14. Wall Plates: Comply with Section 262726.
15. Manufacturers:

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
   1. Comply with NEMA EN 10250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
   2. NEMA EN 10250 Environment Type, Unless Otherwise Indicated:
      a. Indoor Clean, Dry Locations: Type 1, painted steel.
      b. Outdoor Locations: Type 3R, painted steel.
   3. Junction and Pull Boxes Larger Than 100 cubic inches:
      a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
      b. Boxes 6 sq feet and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.
   4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
   5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
   6. Manufacturers:

PART 3 EXECUTION

3.01 3.1 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide separate boxes for emergency power and normal power systems.

E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.

G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

H. Box Locations:
   1. Locate boxes to be accessible. Provide access panels in accordance with Section 083100 as required where approved by the Architect.

I. Box Supports:
   1. Secure and support boxes in accordance with NFPA 70 and Section 260529 using suitable supports and methods approved by the authority having jurisdiction.
   2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
   3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
   4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.

J. Install boxes plumb and level.

K. KFlush-Mounted Boxes:
   1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
   2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
   3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

L. Install boxes as required to preserve insulation integrity.

M. Underground Handhole Enclosures:
   1. Install enclosure on gravel base, minimum 6 inches deep.
   2. Install additional bracing inside enclosures in accordance with manufacturer's instructions to minimize box sidewall deflections during backfilling. Backfill with cover bolted in place.

N. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

O. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.

P. Close unused box openings.

Q. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

R. Provide grounding and bonding in accordance with Section 260526.

3.03 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION 260537

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs; 2023.

B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2023.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. NFPA 70E - Standard for Electrical Safety in the Workplace; 2024.

E. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Electrical identification requirements.

B. Identification nameplates and labels.

C. Wire and cable markers.

D. Voltage markers.

E. Warning signs and labels.

1.03 RELATED REQUIREMENTS

A. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

B. Section 262726 - Wiring Devices: Device and wallplate finishes; factory pre-marked wallplates.

C. Section 271005 - Structured Cabling for Voice and Data: Identification for communications cabling and devices.

1.04 REFERENCE STANDARDS

A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs; 2007.

B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2007.

C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.06 SUBMITTALS

A. See Section 013000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.

C. Shop Drawings: Provide schedule of items to be identified indicating proposed designations, materials, legends, and formats.

D. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation and installation of product.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

1.08 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

A. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Switchboards:
         1) Identify voltage, phase, and AIC rating.
         2) Identify power source and circuit number. Include location when not within sight of equipment.
         3) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
      b. Motor Control Centers:
         1) Identify voltage and phase.

2) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.

c. Panelboards:
1) Identify voltage, phase, and AIC rating.
2) Identify power source and circuit number. Include location when not within sight of equipment.
3) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
4) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.

d. Transformers:
1) Identify kVA rating.
2) Identify voltage and phase for primary and secondary.

e. Enclosed switches, circuit breakers, and motor controllers:
1) Identify voltage and phase.
2) Identify load(s) served. Include location when not within sight of equipment.

f. Enclosed Contactors:
1) Identify ampere rating.
2) Identify voltage and phase.
3) Identify configuration, e.g., E.O.E.H. (electrically operated, electrically held) or E.O.M.H. (electrically operated, mechanically held).
4) Identify load(s) and associated circuits controlled. Include location.

g. Transfer Switches:
1) Identify voltage and phase.
2) Identify power source and circuit number for both normal power source and standby power source. Include location when not within sight of equipment.
3) Identify load(s) served. Include location when not within sight of equipment.

2. Emergency System Equipment:
a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.

3. Use identification label to identify overcurrent protective devices for branch circuits serving fire alarm circuits. Identify with text "FIRE ALARM CIRCUIT".

4. Arc Flash Hazard Warning Labels: Use warning labels to identify arc flash hazards for electrical equipment, such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing, or maintenance while energized.
a. Minimum Size: 3.5 by 5 inches.
b. Legend: Include orange header that reads "WARNING", followed by the word message "Arc Flash and Shock Hazard; Appropriate PPE Required; Do not operate controls or open covers without appropriate personal protection equipment; Failure to comply may result in injury or death; Refer to NFPA 70E for minimum PPE requirements" or approved equivalent.

5. Use warning signs to identify electrical hazards for entrances to all rooms and other guarded locations that contain exposed live parts operating at 600 V nominal or less with the word message "DANGER; Electrical hazard; Authorized personnel only" or approved equivalent.
6. Use warning signs to identify electrical hazards for entrances to all buildings, vaults, rooms, or enclosures containing exposed live parts or exposed conductors operating at over 600 V nominal with the word message "DANGER; HIGH VOLTAGE; KEEP OUT".
7. Use warning labels to identify electrical hazards for equipment, compartments, and enclosures containing exposed live parts or exposed conductors operating at over 600 V nominal with the word message "DANGER; HIGH VOLTAGE; KEEP OUT".
8. Use warning labels, identification nameplates, or identification labels to identify electrical hazards for equipment where multiple power sources are present with the word message "DANGER; Hazardous voltage; Multiple power sources may be present; Disconnect all electric power including remote disconnects before servicing" or approved equivalent.

B. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.
2. Identification for Communications Conductors and Cables: Comply with Section 271005.
3. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
4. Use underground warning tape to identify direct buried cables.

C. Identification for Devices:
1. Identification for Communications Devices: Comply with Section 271005.
2. Wiring Device and Wallplate Finishes: Comply with Section 262726.
3. Use identification label to identify fire alarm system devices.
   a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.

2.02 PRODUCTS

A. Identification Nameplates:
1. Manufacturers:
   a. Brimar Industries, Inc: www.brimar.com.
   b. Kolbi Pipe Marker Co: www.kolbipipemarkers.com.
   c. Seton Identification Products: www.seton.com.
   d. Substitutions: See Section 016000 - Product Requirements.
2. Materials:
   a. Indoor Clean, Dry Locations: Use plastic nameplates.
   b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.

3. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
    a. Exception: Provide minimum thickness of 1/8 inch when any dimension is greater than 4 inches.
4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Manufacturers:
    a. Brady Corporation: www.bradyid.com.
    b. Brother International Corporation: www.brother-usa.com.
    c. Panduit Corp: www.panduit.com.
    d. Substitutions: See Section 016000 - Product Requirements.
2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
    a. Use only for indoor locations.
    b. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend:
    a. System designation where applicable:
        1) Fire Alarm System: Identify with text "FIRE ALARM".
    b. Equipment designation or other approved description.
    c. Other information as indicated.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height:
    a. System Designation: 1 inch.
    b. Equipment Designation: 1/2 inch.
    c. Other Information: 1/4 inch.
5. Color:
    a. Normal Power System: White text on black background.
    b. Emergency Power System: White text on red background.
    c. Fire Alarm System: White text on red background.

D. Format for General Information and Operating Instructions:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/4 inch.
5. Color: Black text on white background unless otherwise indicated.

E. Format for Caution and Warning Messages:
1. Minimum Size: 2 inches by 4 inches.

2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 1/2 inch.
5. Color: Black text on yellow background unless otherwise indicated.

F. Format for Fire Alarm Device Identification:
1. Minimum Size: 3/8 inch by 1.5 inches.
2. Legend: Designation indicated and device zone or address.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height: 3/16 inch.
5. Color: Red text on white background.

G. Nameplates: Engraved three-layer laminated plastic, black letters on white background.

H. Locations:
1. Each electrical distribution and control equipment enclosure.
2. Communication cabinets.

I. Letter Size:
1. Use 1/8 inch letters for identifying individual equipment and loads.
2. Use 1/4 inch letters for identifying grouped equipment and loads.

J. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. Use only for identification of individual wall switches and receptacles, and control device stations.

K. Wire Markers
1. Manufacturers:
2. Brady Corporation: www.bradyid.com.
3. HellermannTyton: www.hellermanntyton.com.
4. Panduit Corp: www.panduit.com.
a. Substitutions: See Section 016000 - Product Requirements.

L. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.

M. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.

N. Legend: Power source and circuit number or other designation indicated.

O. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
1. Do not use handwritten text.

P. Minimum Text Height: 1/8 inch.

Q. Color: Black text on white background unless otherwise indicated.

2.03 WARNING SIGNS AND LABELS

A. Manufacturers:
1. Brimar Industries, Inc: www.brimar.com.

2. Clarion Safety Systems, LLC: www.clarionsafety.com.
3. Seton Identification Products: www.seton.com.
4. Substitutions: See Section 016000 - Product Requirements.

B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.

C. Warning Signs:
1. Materials:
a. Indoor Dry, Clean Locations: Use factory pre-printed rigid plastic or self-adhesive vinyl signs.
b. Outdoor Locations: Use factory pre-printed rigid aluminum signs.
2. Rigid Signs: Provide four mounting holes at corners for mechanical fasteners.
3. Minimum Size: 7 by 10 inches unless otherwise indicated.

D. Warning Labels:
1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester, or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
a. Do not use labels designed to be completed using handwritten text.
2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
3. Minimum Size: 2 by 4 inches unless otherwise indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
1. Surface-Mounted Equipment: Enclosure front.
2. Flush-Mounted Equipment: Inside of equipment door.
3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
4. Elevated Equipment: Legible from the floor or working platform.
5. Branch Devices: Adjacent to device.
6. Interior Components: Legible from the point of access.
7. Conductors and Cables: Legible from the point of access.
8. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing, or epoxy cement.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.

G. Secure rigid signs using stainless steel screws.

H. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

A. See Section 014000 - Quality Requirements, for additional requirements.

B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION 260553

SECTION 262200 - LOW-VOLTAGE TRANSFORMERS

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. IEEE C57.94 - IEEE Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type Distribution and Power Transformers; 2015.
B. IEEE C57.96 - IEEE Standard Guide for Loading Dry-Type Distribution and Power Transformers; 2013.
C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
D. NECA 409 - Standard for Installing and Maintaining Dry-Type Transformers; 2015.
E. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
F. NEMA ST 20 - Dry Type Transformers for General Applications; 2021.
G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. UL 506 - Standard for Specialty Transformers; Current Edition, Including All Revisions.
I. UL 1561 - Standard for Dry-Type General Purpose and Power Transformers; Current Edition, Including All Revisions.

1.02 SECTION INCLUDES

A. General purpose transformers.

1.03 RELATED REQUIREMENTS

A. Section 033000 - Cast-in-Place Concrete: Concrete equipment pads.
B. Section 260526 - Grounding and Bonding for Electrical Systems.
C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
D. Section 260534 - Conduit: Flexible conduit connections.
E. Section 262416 - Panelboards.

1.04 1.3 REFERENCE STANDARDS

A. IEEE C57.94 - Recommended Practice for Installation, Application, Operation, and Maintenance of Dry-Type General Purpose Distribution and Power Transformers; 1982 (R2006).
B. IEEE C57.96 - Guide for Loading Dry-Type Distribution and Power Transformers; 1999 (R2004).
C. NECA 409 - Standard for Installing and Maintaining Dry-Type Transformers; 2009.

D. NEMA ST 20 - Dry-Type Transformers for General Applications; National Electrical Manufacturers Association; 1992 (R1997).

E. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2008

F. NEMA TP 1 - Guide for Determining Energy Efficiency for Distribution Transformers; 2002.

G. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2009.

H. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

I. UL 506 - Standard for Specialty Transformers; Current Edition, Including All Revisions.

J. UL 1561 - Standard for Dry-Type General Purpose and Power Transformers; Current Edition, Including All Revisions.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors required for mounting of transformers.

1.06 1SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

B. Product Data: Include voltage, kVA, impedance, tap configurations, insulation system class and rated temperature rise, efficiency, sound level, enclosure ratings, outline and support point dimensions, weight, required clearances, service condition requirements, and installed features.
   1. Vibration Isolators: Include attachment method and rated load and deflection.

C. Shop Drawings: Provide dimensioned plan and elevation views of transformers and adjacent equipment with all required clearances indicated.

D. Source Quality Control Test Reports: Include reports for tests designated in NEMA ST 20 as design and routine tests.

E. Field Quality Control Test Reports.

F. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

G. Maintenance Data: Include recommended maintenance procedures and intervals.

H. Project Record Documents: Record actual locations of transformers.

1.07 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to transformer internal components, enclosure, and finish.

1.09 FIELD CONDITIONS

A. Ambient Temperature: Do not exceed 86 degrees Fahrenheit average or 104 degrees Fahrenheit maximum measured during any 24 hour period during and after installation of transformers.

1.10 WARRANTY

A. See Section 017800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Eaton Corporation; Cutler-Hammer Products: www.eaton.com.

B. General Electric Company: www.geindustrial.com.

C. Schneider Electric; Square D Products: www.schneider-electric.us.

D. Substitutions: See Section 016000 - Product Requirements.

E. Source Limitations: Furnish transformers produced by the same manufacturer as the other electrical distribution equipment used for this project and obtained from a single supplier.

2.02 ALL TRANSFORMERS

A. Description: Factory-assembled, dry type transformers for 60 Hz operation designed and manufactured in accordance with NEMA ST 20 and listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

B. Unless noted otherwise, transformer ratings indicated are for continuous loading according to IEEE C57.96 under the following service conditions:
   1. Altitude: Less than 3,300 feet.
   2. Ambient Temperature: Not exceeding 86 degrees Fahrenheit average or 104 degrees Fahrenheit maximum measured during any 24 hour period.

C. Core: High grade, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses. Keep magnetic flux densities substantially below saturation point, even at 10 percent primary overvoltage. Tightly clamp core laminations to prevent plate movement and maintain consistent pressure throughout core length.

D. Impregnate core and coil assembly with non-hydroscopic thermo-setting varnish to effectively seal out moisture and other contaminants.

E. Basic Impulse Level: 10 kV.

F. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.

G. Isolate core and coil from enclosure using vibration-absorbing mounts.

H. Nameplate: Include transformer connection data, ratings, wiring diagrams, and overload capacity based on rated winding temperature rise.

2.03 GENERAL PURPOSE TRANSFORMERS

A. Description: Self-cooled, two winding transformers listed and labeled as complying with UL 506 or UL 1561; ratings as indicated on the drawings.

B. Primary Voltage: 480 volts delta, 3 phase.

C. Secondary Voltage: 208Y/120 volts, 3 phase.

D. Insulation System and Allowable Average Winding Temperature Rise:
   1. Less than 15 kVA: Class 365 degrees Fahrenheit insulation system with 239 degrees Fahrenheit average winding temperature rise.
   2. 15 kVA and Larger: Class 428 degrees Fahrenheit insulation system with 302 degrees Fahrenheit average winding temperature rise.

E. Coil Conductors: Continuous copper windings with terminations brazed or welded.

F. Winding Taps:
   1. Less than 3 kVA: None.
   2. 3 kVA through 15 kVA: Two 5 percent full capacity primary taps below rated voltage.
   3. 15 kVA through 300 kVA: Two 2.5 percent full capacity primary taps above and four 2.5 percent full capacity primary taps below rated voltage.
   4. 500 kVA and Larger: Two 2.5 percent full capacity primary taps above and two 2.5 percent full capacity primary taps below rated voltage.

G. Energy Efficiency: Standard efficiency complying with NEMA TP 1.

H. Sound Levels: Standard sound levels complying with NEMA ST 20.

I. Mounting Provisions:
   1. Less than 15 kVA: Suitable for wall mounting.
   2. 15 kVA through 75 kVA: Suitable for wall, floor, or trapeze mounting.
   3. Larger than 75 kVA: Suitable for floor mounting.

J. Transformer Enclosure: Comply with NEMA ST 20.
   1. Environment Type per NEMA EN 10250: Unless otherwise indicated, as specified for the following installation locations:
      a. Indoor clean, dry locations: Type 1.
      b. Outdoor locations: Type 3R.
   2. Construction: Heavy gage steel.
      a. Less than 15 kVA: Totally enclosed, non-ventilated.
      b. 15 kVA and Larger: Ventilated.
   3. Finish: Manufacturer's standard grey, suitable for outdoor installations.
   4. Provide lifting eyes or brackets.

K. Accessories:
   1. Mounting Brackets: Provide manufacturer's standard brackets.
   2. Weathershield Kits: Provide for ventilated transformers installed outdoors to provide a listed NEMA EN 10250, type 3R assembly.
   3. Lug Kits: Sized as required for termination of conductors as indicated on the drawings.

2.04 SOURCE QUALITY CONTROL

A. Factory test transformers according to NEMA ST 20.

B. Sound Level Tests: Perform factory test designated in NEMA ST 20 as "design" test on each production unit.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that suitable support frames and anchors are installed where required and that mounting surfaces are ready to receive transformers.

C. Perform pre-installation tests and inspections on transformers per manufacturer's instructions and as specified in NECA 409. Correct deficiencies prior to installation.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Perform work in a neat and workmanlike manner in accordance with NECA 1.

B. Install transformers in accordance with manufacturer's instructions.

C. Install transformers in accordance with NECA 409 and IEEE C57.94.

D. Use flexible conduit, under the provisions of Section 260534, 2 feet minimum length, for connections to transformer case. Make conduit connections to side panel of enclosure.

E. Arrange equipment to provide minimum clearances as specified on transformer nameplate and in accordance with manufacturer's instructions and NFPA 70.

F. Mount wall-mounted transformers using integral flanges or accessory brackets furnished by the manufacturer.

G. Mount floor-mounted transformers on properly sized 3 inch high concrete pad constructed in accordance with Section 033000.

H. Mount floor-mounted transformers using vibration isolators suitable for isolating the transformer noise from the building structure.

I. Mount trapeze-mounted transformers as indicated.

J. Provide seismic restraints.

K. Provide grounding and bonding in accordance with Section 260526.

L. Remove shipping braces and adjust bolts that attach the core and coil mounting bracket to the enclosure according to manufacturer's recommendations in order to reduce audible noise transmission.

M. Where not factory-installed, install lugs sized as required for termination of conductors as shown on the drawings.

N. Where furnished as a separate accessory, install transformer weathershield per manufacturer's instructions.

O. Identify transformers in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection, testing, and adjusting in accordance with Section 014000.

B. Inspect and test in accordance with NETA STD ATS, except Section 4.

C. Perform inspections and tests listed in NETA STD ATS Sections 7.2.1.1 and 7.2.1.2. Tests and inspections listed as optional are not required.

3.04 ADJUSTING

A. Measure primary and secondary voltages and make appropriate tap adjustments.

B. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from transformer components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION 262200

SECTION 262717 - EQUIPMENT WIRING

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.02 SECTION INCLUDES

A. Electrical connections to equipment.

1.03 RELATED REQUIREMENTS

A. Section 26 0534 - Conduit.

B. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables (600 V and Less).

C. Section 26 0537 - Boxes.

D. Section 26 2818 - Enclosed Switches.

1.04 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association; 1999 (R 2005).

B. NEMA WD 6 - Wiring Devices - Dimensional Requirements; National Electrical Manufacturers Association; 2002 (R2008).

C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

1.06 COORDINATION

A. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
B. Determine connection locations and requirements.
C. Sequence rough-in of electrical connections to coordinate with installation of equipment.
D. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Conform to NEMA WD 1.
   2. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
   3. Substitutions: See Section 01 6000 - Product Requirements.
B. Wiring Devices: As specified in Section 26 2726.
C. Flexible Conduit: As specified in Section 26 0534.
D. Wire and Cable: As specified in Section 26 0519.
E. Boxes: As specified in Section 26 0537.

PART 3 EXECUTION

3.01 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.
B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
D. Provide receptacle outlet to accommodate connection with attachment plug.
E. Provide cord and cap where field-supplied attachment plug is required.
F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
G. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION 262717

SECTION 262726 - WIRING DEVICES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2014h (Validated 2022).
B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification); 2017g (Validated 2023).
C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).
F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.
G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.
I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.
K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.
L. UL 1472 - Solid-State Dimming Controls; Current Edition, Including All Revisions.

1.02 PROJECT INCLUDES

A. Wall switches.
B. Wall dimmers.
C. Receptacles.
D. Wall plates.
E. Floor box service fittings.
F. Poke-through assemblies.

1.03 RELATED REQUIREMENTS

A. Section 260537 - Boxes.

1.04 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; Federal Specification; Revision G, 2001.

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); Federal Specification; Revision F, 1999.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.

D. NEMA WD 1 - General Color Requirements for Wiring Devices; National Electrical Manufacturers Association; 1999 (R 2005).

E. NEMA WD 6 - Wiring Device -- Dimensional Requirements; National Electrical Manufacturers Association; 2002 (R2008).

F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

H. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

I. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

J. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

K. UL 1472 - Solid-State Dimming Controls; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. See Section 013000 - Administrative Requirements, for submittal procedures.

1.06 QUALITY ASSURANCE

A. Conform to requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Leviton.

B. Hubbell

C. Thomas & Betts

2.02 APPLICATIONS

2.03 ALL WIRING DEVICES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

B. Finishes:

2.04 WALL SWITCHES

A. Manufacturers:

B. All Wall Switches: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

C. Standard Wall Switches: Commercial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.05 WALL DIMMERS

A. All Wall Dimmers: Provide low-voltage Lighting Control System dimmers and controls in Media Center including Hubbell NX local room controllers (on, off, dim). NX room controllers will operate as stand-alone systems within the Media Center.

2.06 RECEPTACLES

A. Manufacturers:

B. All Receptacles: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
   2. NEMA configurations specified are according to NEMA WD 6.

C. Convenience Receptacles:

D. GFI Receptacles:
   1. All GFI Receptacles: Provide with feed-through protection, light to indicate ground fault tripped condition and loss of protection, and list as complying with UL 943, class A.
   2. Weather Resistant GFI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.

E. Clock Hanger Receptacles: Single, 15A, 125V, NEMA 5-15R.

2.07 WALL PLATES

A. Manufacturers:

B. All Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard.
   3. Screws: Metal with slotted heads finished to match wall plate finish.

C. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.

D. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.

E. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected.

2.08 FLOOR BOX SERVICE FITTINGS

A. Manufacturers:

B. Description: Service fittings compatible with floor boxes provided under Section 260537 with all components, adapters, and trims required for complete installation.

2.09 POKE-THROUGH ASSEMBLIES

A. Manufacturers:

B. Description: Assembly comprising floor service fitting, poke-through component, fire stops and smoke barriers, and junction box for conduit termination; fire rating listed to match fire rating of floor and suitable for floor thickness where installed.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as shown on the drawings.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

F. Verify that core drilled holes for poke-through assemblies are in proper locations.

G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Coordinate locations of outlet boxes provided under Section 260537 as required for installation of wiring devices provided under this section.
   1. Mounting Heights: Unless otherwise indicated, as follows:
   2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
   3. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
   4. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
   5. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.

C. Install wiring devices in accordance with manufacturer's instructions.

D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, do not use push-in pressure terminals that do not rely on screw-actuated binding.

G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.

H. For isolated ground receptacles, connect wiring device grounding terminal only to identified branch circuit isolated equipment grounding conductor. Do not connect grounding terminal to outlet box or normal branch circuit equipment grounding conductor.

I. Provide GFI receptacles with integral GFI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.

J. Install wiring devices plumb and level with mounting yoke held rigidly in place.

K. Install wall switches with OFF position down.

L. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

M. Do not share neutral conductor on branch circuits utilizing wall dimmers.

N. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.

O. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

P. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

Q. Install poke-through closure plugs in all unused core holes to maintain fire rating of floor.

3.04 FIELD QUALITY CONTROL

A. Perform field inspection, testing, and adjusting in accordance with Section 014000.
B. Inspect each wiring device for damage and defects.
C. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.
D. Operate each wall switch with circuit energized and verify proper operation.
E. Verify that each receptacle device is energized.
F. Test each receptacle to verify operation and proper polarity.
G. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
H. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.06 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION 262726

SECTION 262813 - FUSES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements; Current Edition, Including All Revisions.

1.02 1SECTION INCLUDES

A. Fuses.

1.03 RELATED REQUIREMENTS

A. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

B. Section 26 2818 - Enclosed Switches: Fusible switches.

1.04 REFERENCE STANDARDS

A. NEMA FU 1 - Low Voltage Cartridge Fuses; National Electrical Manufacturers Association; 2002 (R2007).

B. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard data sheets including voltage and current ratings, interrupting ratings, time-current curves, and current limitation curves.

1.06 MAINTENANCE MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Furnish two fuse pullers.

C. Furnish three of each size and type fuse installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cooper Bussmann, a division of Cooper Industries: www.cooperindustries.com.
B. Mersen (formerly Ferraz Shawmut): ferrazshawmut.mersen.com.
C. Littelfuse, Inc: www.littelfuse.com.
D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FUSES

A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.
B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.
C. Provide fuses of the same type, rating, and manufacturer within the same switch.
D. Comply with UL 248-1.
E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.
F. Voltage Rating: Suitable for circuit voltage.
G. Main Service Switches Larger than 600 amperes: Class L (time delay), Low-peak.
H. Main Service Switches: Class RK1 (time delay), Low-peak.
I. Power Load Feeder Switches Larger than 600 amperes: Class L (time delay), Low-peak.
J. Power Load Feeder Switches: Class RK1 (time delay), Low-peak.
K. Motor Load Feeder Switches: Class RK1 (time delay), Fusetron.
L. Lighting Load Feeder Switches Larger than 600 amperes: Class L time delay, Low-peak.
M. Lighting Load Feeder Switches: Class RK1 (time delay), Low-peak.
N. General Purpose Branch Circuits: Class RK1 (time delay), Low-peak.
O. Motor Branch Circuits: Class L time delay, Fusetron.

PART 3 EXECUTION

3.01 INSTALLATION

A. Do not install fuses until circuits are ready to be energized.
B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION 262813

SECTION 262818 - ENCLOSED SWITCHES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
B. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
C. NEMA BS 31047 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013 (Reaffirmed 2023).
D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
E. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
F. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
G. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.

1.02 SECTION INCLUDES

A. Enclosed safety switches.
B. Fusible switches.
C. Nonfusible switches.

1.03 RELATED REQUIREMENTS

A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
B. Section 26 0529 - Hangers and Supports for Electrical Systems.
C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
D. Section 26 2813 - Fuses.

1.04 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
B. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2008.
C. NEMA FU 1 - Low Voltage Cartridge Fuses; National Electrical Manufacturers Association; 2002 (R2007).
D. NEMA BS 31047 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum); National Electrical Manufacturers Association; 2001 (R2006).

E. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

H. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Siemens Industry, Inc: www.sea.siemens.com.

B. Eaton Corporation; Cutler-Hammer Products: www.eaton.com.

C. General Electric Company: www.geindustrial.com.

D. Schneider Electric; Square D Products: www.schneider-electric.us.

2.02 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break, enclosed safety switches complying with NEMA BS 31047, type HD (heavy duty), and listed and labeled as complying with UL 98; ratings, configurations, and features as indicated on the drawings.

B. Provide products listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between -22 degrees Fahrenheit and 104 degrees Fahrenheit.

D. Horsepower Rating: Suitable for connected load.

E. Voltage Rating: Suitable for circuit voltage.

F. Short Circuit Current Rating:

G. Provide with switch blade contact position that is visible when the cover is open.

H. Conductor Terminations: Suitable for use with the conductors to be installed.

I. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.

J. Enclosures: Comply with NEMA BS 31047 and NEMA EN 10250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA EN 10250: Unless otherwise indicated, as specified for the following installation locations:

K. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

L. Heavy Duty Switches:
   1. Conductor Terminations:
      a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
   2. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

2.03 COMPONENTS

A. Fusible Switch Assemblies: NEMA BS 31047, Type HD enclosed load interrupter knife switch.
   1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
   2. Handle lockable in OFF position.
   3. Fuse clips: Designed to accommodate NEMA FU1, Class R fuses.

B. Nonfusible Switch Assemblies: NEMA BS 31047, Type HD enclosed load interrupter knife switch.
   1. Externally operable handle interlocked to prevent opening front cover with switch in ON position.
   2. Handle lockable in OFF position.

C. Enclosures: NEMA BS 31047.
   1. Interior Dry Locations: Type 1.
   2. Exterior Locations: Type 3R.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install enclosed switches in accordance with manufacturer's instructions.

B. Install enclosed switches securely, in a neat and workmanlike manner in accordance with NECA 1.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required supports in accordance with Section 26 0529.

E. Install enclosed switches plumb.

F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 0526.

H. Provide identification nameplate for each enclosed switch in accordance with Section 26 0553.

I. Provide arc flash warning labels in accordance with NFPA 70.

J. Install fuses in fusible disconnect switches.

K. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

END OF SECTION 262818