

PROJECT MANUAL

GERRY B GREEN

PLAZA

ALTERATIONS

200 West 2nd Street
Plainfield, New Jersey

for

UNION COUNTY IMPROVEMENT AUTHORITY

10 ELIZABETHTOWN PLAZA 5th FLOOR
ELIZABETH, NEW JERSEY 07207

RSC ARCHITECTS
3 UNIVERSITY PLAZA DRIVE
HACKENSACK NEW JERSEY

REQUEST FOR BIDS
JUNE, 26th 2025



Digitally signed by John Capazzi
Date: 2025.06.23 15:31:06-04'00'

(N) = New Section (R) = Revised Section (D) = Deleted Section

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UNION COUNTY IMPROVEMENT AUTHORITY

REQUEST FOR BIDS

FOR

Gerry B. Green Plaza Alterations

ISSUED BY:

**Union County Improvement Authority
10 Elizabethtown Plaza
Elizabeth, New Jersey 07207**

Bid Submission Date:

Thursday the 28th of August 2025

UNION COUNTY IMPROVEMENT AUTHORITY
Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

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UNION COUNTY IMPROVEMENT AUTHORITY NOTICE TO BIDDERS -- The Union County Improvement Authority (UCIA) is soliciting bids for the Gerry B. Green Plaza Alterations, located at 200 West 2nd Street, Plainfield, New Jersey. Sealed bids will be received by the UCIA at its Administrative Offices located at 10 Elizabethtown Plaza, 5th Floor, Elizabeth, New Jersey 07202 on or before **Thursday, August 28th, 2025 at 10:00 AM** prevailing time, at which time the bids will be publicly opened and read aloud.

The bid plans and specifications, drawings, and other related documents for this work ("Bid Documents") may be obtained electronically on or after **Thursday, June 26th, 2025** by completing the request form on the Union County Improvement Authority web site at:

<https://ucimprovementauthority.org>

Questions regarding the bid shall be directed in writing to Bibi Taylor of Union County Improvement Authority, Timothy Hennessy of RSC Architects and Bob Pasqual of Pinnacle Consulting and Construction Services via email at btaylorUCIA@ucnj.org, bidding@rscarchitects.com and bobp@pinnacleconsult.net. Written questions must be sent by **Wednesday, August 13th, 2025 at 5:00 PM**. Any addendum may be obtained electronically on or after **Friday, August 15th, 2025 on the Union County Improvement Authority web site at: <https://ucimprovementauthority.org>**. It is the responsibility of the bidder to obtain the addendum.

A **pre-bid meeting** will be held on **Tuesday, July 8th, 2025 at 10:30 AM** at the Gerry B. Green Building, located at 200 West 2nd Street, Plainfield, New Jersey. A site tour will be conducted immediately following the pre-bid meeting. Attendance at the prebid meeting is not mandatory. However it is strongly encouraged that the bidder attend the prebid meeting, either personally or through a representative identifying themselves as such.

Bidders must be classified by the State of New Jersey, Division of Property Management and Construction (DPMC) under classification code No. C008, No. C009, as well as other documentary requirements as set forth in the INSTRUCTIONS TO BIDDERS found in the Bid Documents. This project shall be subject to a Project Labor Agreement (PLA), the form of which is included in the Bid Documents.

Bids must be accompanied by a certified check, cashier's check or bond of a surety authorized to do business in New Jersey in the amount of ten percent (10%) of the total bid amount, but not exceeding \$20,000, and must be accompanied by a consent of surety stating that surety will provide the bonds required by the Bid Documents, if bidder is awarded a contract.

Bidders shall submit an **original and two copies** of their bid in a sealed envelope, clearly marked on the outside with the words "Gerry B. Green Plaza Alterations," and with bidder's name, address, telephone & fax numbers, and date of bid opening. Bids must be delivered to Dr. Bibi Taylor, Executive Director of the UCIA, 10 Elizabethtown Plaza, 5th Floor, Elizabeth, New Jersey 07207, prior to the stated time of bid opening. Late bids will be returned, unopened, to the bidder. The UCIA will not be responsible for late delivery; bidders shall assume full responsibility for timely delivery of their bids.

Bidders are required to comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27.

The award or rejection of a contract for the project shall be made within sixty (60) days of the bid opening date, except that the bids of any bidders who consent thereto may, at the request of the contracting unit, be held for consideration for such longer period as may be agreed. The UCIA reserves the right to (i) reject any Bid in accordance with N.J.S.A. 40A:11-13.2 and any Bidder that is deemed not responsible in accordance with the law; technical errors in accordance with law,

Union County Improvement Authority
10 Elizabethtown Plaza, 5th Floor
Elizabeth, New Jersey 07207

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
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ARTICLE 1 INSTRUCTIONS TO BIDDERS

1.01 INVITATION TO BID

- A. Sealed bids will be received by the Union County Improvement Authority (UCIA) at its Administrative Offices located at 10 Elizabethtown Plaza, 5th Floor, Elizabeth, New Jersey 07207 at the time and place stated in the Notice to Bidders and shall be publicly opened and read aloud for:

ALTERATION AND ADDITION TO THE GERRY B. GREEN PLAZA ALTERATIONS

1.02 PREPARATION OF BIDS

- A. Bids shall be submitted to the UCIA. Bids shall be submitted only on UCIA bid forms or a true copy thereof. Bids must be submitted in **triplicate (original and two copies)** in an envelope and shall be sealed and plainly marked on the outside to show bidder's name and address, telephone & fax numbers, bid due date, and the name of the bid: "Gerry B. Green Plaza Alterations."
- B. Any bid not prepared and submitted in accordance with the provisions described herein may be considered informal by the UCIA, who reserves the right to waive any informalities in the bid or reject all bids. Any bid received after the time and date specified will not be considered. No bidder shall withdraw a bid within sixty (60) days after the date of the bid opening, except due to mistake pursuant to N.J.S.A. 40A:11- 23.3.
- C. Before submitting its bid, the bidder shall be familiar with the Bid Documents that will form part of the contract and shall have visited the site of the project to confirm for itself the character and amount of work involved. Bidder shall confirm also that it can secure the necessary labor and equipment and that the materials it proposes to use will comply with the requirements of the contract and can be obtained by bidder in the quantities and at the time required.
- D. Where unit prices are required, bidder shall fill in applicable unit prices. Unit prices shall prevail over extended totals, in the event of a discrepancy between them. All unit prices, whether filled in by the bidder or established by the Bid Documents shall become part of the contract. No bid will be considered or award made unless applicable unit prices, as required, are filled in.
- E. Should the bidder discover discrepancies in this Request for Bids, such discrepancies shall immediately be brought to the attention of the UCIA, and the discrepancies

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corrected by written agreement before proceeding further. The correction will be issued by addendum.

- F. Any interpretation or instruction regarding the Bid Documents will be in the form of an addendum to the Bid Documents, and will be furnished to all prospective bidders. Oral explanation or instruction will not be binding. Addenda are amendments to the Bid Documents and shall be considered in preparing bids. Addenda take precedence over all earlier documents and over each other according to the latest date.
- G. Failure of any bidder to receive an addendum shall not relieve such bidder from the obligation imposed by such addendum. Bidders should keep themselves currently acquainted with the Bid Documents during the bidding period and make inquiry on their own initiative as to issuance of any addenda. Receipt of all addenda shall be acknowledged on the Acknowledgement of Receipt of Addenda form provided at page B-15.

1.03 GENERAL INFORMATION

- A. Questions regarding the Bid Documents shall be directed in writing to Laura Scutari, Union County via fax (908-558-2548) and Timothy Hennessy, at RSC Architects via fax (201-917-2747) or email bidding@rscarchitects.com and lscutari@ucnj.org and copy Senait Rhoden senait.rhoden@ucnj.org and Kelli Wilson kelliw@pinnacleconsult.net. Written questions must be received no later than **Wednesday, August 18th, 2025 at 5:00 PM**.
- B. Any bidder who has found to have prior negative experience, as defined in N.J.S.A 40A:11-4(b). The UCIA reserves the right to exercise this option as it deems proper and/or necessary and in its best interest.
- C. The UCIA is exempt from all taxes including federal excise tax, transportation taxes, state excise, sales tax and local taxes. Contractor is required to familiarize itself with all governing tax laws.
- D. It is understood and agreed that all prices quoted are firm and not subject to any increase during the life of the contract.
- E. Should any difference arise between the contracting parties as to the meaning or intent of these instructions or the drawings and specifications, the UCIA's decision shall be final and conclusive.
- F. The UCIA may make such investigation as it deems necessary to determine the ability of the bidder to perform the work, which includes investigation of any and all subcontractors listed with the bid. The bidder shall furnish any information and data

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1.03 GENERAL INFORMATION

- A. Questions regarding the bid shall be directed in writing to Bibi Taylor of Union County Improvement Authority, Timothy Hennessy of RSC Architects and Bob Pasqual of Pinnacle Consulting and Construction Services via email at btaylorUCIA@ucnj.org , bidding@rscarchitects.com and bobp@pinnacleconsult.net. Written questions must be sent by **Wednesday, August 13th, 2025 at 5:00 PM.**
- B. Any bidder who has found to have prior negative experience, as defined in N.J.S.A 40A:11-4(b). The UCIA reserves the right to exercise this option as it deems proper and/or necessary and in its best interest.
- C. The UCIA is exempt from all taxes including federal excise tax, transportation taxes, state excise, sales tax and local taxes. Contractor is required to familiarize itself with all governing tax laws.
- D. It is understood and agreed that all prices quoted are firm and not subject to any increase during the life of the contract.
- E. Should any difference arise between the contracting parties as to the meaning or intent of these instructions or the drawings and specifications, the UCIA's decision shall be final and conclusive.
- F. The UCIA may make such investigation as it deems necessary to determine the ability of the bidder to perform the work, which includes investigation of any and all subcontractors listed with the bid. The bidder shall furnish any information and data

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for this purpose as may be reasonably requested by the UCIA. The successful bidder may be subject to a criminal background check in accordance with applicable law.

1.04 DELIVERY OF BIDS

- A. Bids shall be delivered to Dr. Bibi Taylor, Executive Director, Union County Improvement Authority, 10 Elizabethtown Plaza, 5th Floor, Elizabeth, New Jersey, no later than the time and date indicated in the Notice to Bidders in a sealed envelope. Bids that arrive after the specified date and time shall be returned to the bidder unopened.
- B. The UCIA shall not be responsible for late postal or overnight delivery, nor shall postmark dates or overnight dates be considered in honoring the bids. The UCIA shall not be responsible for hand delivered bids arriving late or at the wrong location. Unsealed, faxed or e-mailed bids will not be accepted. The UCIA shall not be responsible for, nor be required to, grant relief from non-delivery of bids forwarded by mail or third-party messenger/delivery services.

1.05 BID FORMS

- A. Attention is directed to the fact that this Request for Bids includes a complete set of bid forms.
- B. All bids shall be typewritten or printed in ink on the bid forms furnished by the UCIA. All bids must be signed by the officials of the corporation or company duly authorized to sign bid proposals, and all corrections or erasures shall be initialed by the person signing the proposal or by his/her authorized representative.
- C. In the event there is a discrepancy between the unit price bid and the extended total, the unit price will govern. Any discrepancies will be mathematically adjusted.
- D. All alternates MUST be bid upon. Any bidder's failure to do so will be deemed a material, non-waivable defect and shall render the bid nonresponsive. The bidder shall clearly designate whether the change in price is an addition or subtraction, by using either as "+" sign or the word "addition," or in the alternative, a "-" sign or the word, "minus." If there is no other change in price, the bidder shall insert, "NC" or "No Charge."

1.06 BID SECURITY

- A. Bids must be accompanied by a Certified Check, a Cashier's Check or Bid Bond payable to the order of the UCIA, in the sum of not less than ten (10%) percent of the total amount of the bid, to a maximum of \$20,000.

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- B. All bid deposits shall be returned in accordance with the timeframes provided in N.J.S.A. 40A:11-24, except for the successful bidder(s) whose bid security shall be returned after execution of a formal contract and delivery of the performance bond/labor and material bond and certificates of insurance.
- C. Should the successful bidder fail to enter into a contract after acceptance of the bid by the UCIA, the check or security deposited by such bidder shall, at the option of the UCIA, be retained as liquidated damages, or if a bid bond has been supplied, principal and surety shall be liable to UCIA in the amount of the bid bond.

1.07 CERTIFICATION OF SURETY

- A. All bids shall be accompanied by a consent of surety from a surety company authorized to transact business in the State of New Jersey, stating that the surety will provide a bond in the sum equal to the full amount of the contract price if the contract is awarded to the bidder, conditioned on the faithful performance of the contract in strict accordance with the contract documents, and for the payment of labor, materials and all other indebtedness that may accrue on account of the work. Failure to submit a consent of surety with the bid will result in automatic rejection.

1.08 NON-COLLUSION AFFIDAVIT

- A. The Non-Collusion Affidavit at page B-14 must be filled in completely and sworn to before a Notary Public and provided with the bid. Failure to do so will result in rejection of the bid.
 - 1. Bidder certifies that, to the best of its knowledge, no UCIA official or employee has a vested interest, financial or otherwise, in the bid and if awarded a contract, will have no vested interest, financial or otherwise, in the contract. Bidder or contractor, as the case may be, agrees to comply in all respects with the Public Official and Employee Ethics Act. Bidder or Contractor will inform the UCIA in writing immediately if any potential conflict of interest arises during the course of bidding or during the performance of any contract entered into with the UCIA. Conflict of interest may constitute grounds for disqualification of bidder or termination of any contract following notification by the UCIA to bidder or contractor if same is not corrected by bidder or contractor within the time period established by the UCIA in such notice.

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1.09 OWNERSHIP DISCLOSURE STATEMENT

- A. The Ownership Disclosure Statement at page B-10 shall be completed and sworn to before a Notary Public and submitted with the bid. Failure to do so will result in rejection of the bid.

1.10 PERFORMANCE/PAYMENT BOND

- A. Simultaneously with delivery of the executed contract, the successful bidder shall be required to furnish the UCIA with an executed Performance/Payment Bond (in the sum of one hundred percent (100%) of the Contract amount) from a surety company authorized to do business in the State of New Jersey. The Bond shall be in a form that is satisfactory to the UCIA, and be conditioned for the faithful performance of the contract and for the prompt payment of all materials and labor supplied or performed in the prosecution of the work. It shall be a condition of the bond that labor and material providers furnishing labor and materials in, and for, the prosecution of the work, shall have the right, according to law, to sue in an action of assumpsit, in the name of the obligee, for their use upon said bond, for such sum or sums as may be justly due. A form of Performance/Payment bond acceptable to the UCIA is provided at page B-8. If bidder's surety uses a different form, it must be substantially similar to the form provided at B-8.

1.11 POWER OF ATTORNEY

- A. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified copy of their Power of Attorney to sign said bonds.

1.12 ACCEPTANCE/REJECTION OF BIDS

- A. The UCIA reserves the right to accept or reject any or all items covered in the bid request, or any portion(s) thereof, waive formalities, reject all bids, re-advertise and/or take such other steps decreed necessary and in accordance with all applicable law. Where two or more bidders are tied and all other relevant factors being equal, the UCIA reserves the right to make the award to one of the bidders.
- B. Except as provided in Section 1.13 hereof, the bid is irrevocable by the bidder or the bidder's representatives. The bid, and any award made to the bidder by the UCIA, shall bind the bidder and the bidder's heirs, executors, administrators, successors or assigns.

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- C. Any award of a contract shall be made to the lowest responsible and responsive bidder based on the total lump sum base bid price plus allowances and alternate(s) as selected by the UCIA.
- D. The award of a contract or the rejection of the bids shall be made within sixty (60) days of the date of receiving bids, unless written extensions are requested by the UCIA and accepted by the bidder(s). All bid securities shall be returned immediately if all bids are rejected. The successful bidder(s) to whom the award is to be made will be notified by receipt of the contract or a written "Notice to Proceed" from the UCIA (or its representative).

1.13 WITHDRAWAL OF BIDS

- A. A written request for the withdrawal of a bid, or any part thereof, will be granted if the request is received by the UCIA prior to the specified time of the bid opening. Should a bidder request withdrawal of their bid after the bid opening date and time, the owner has the right to deny said request and require the lowest bidder to perform the work for the price provided in the bid, at the owner's discretion.
- B. Should the bidder refuse to perform the work for the price provided, it will forfeit its bid security and will be held liable for the difference between its low bid and the next highest/responsive bidder.
- C. A bidder may request withdrawal of its bid due to mistake pursuant to N.J.S.A. 40A:11-23.3.

1.14 INDEMNIFICATION

- A. The successful bidder shall be bound by the provisions of the Hold Harmless Clause at page B-13, which Clause shall become part of the contract.

1.15 ASSIGNMENTS

- A. Assignment to any third party of any monies due or to grow due the bidder or any contract based on this bid is prohibited and will not be recognized by the UCIA, except for financing.

1.16 CLASSIFICATION AND QUALIFICATION OF BIDDERS

- A. Pursuant to Resolution of the UCIA adopting the County of Union's policy pursuant to Ordinance No. 557-2002 of the Union County Board of County Commissioners, all bidders for building construction projects shall be classified and qualified in accordance

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with the New Jersey Department of Treasury, Division of Property Management and Construction (DPMC). Bidders must be classified under DPMC classification code No. C008, C009.

1.17 UNCOMPLETED CONTRACTS

- A. The bidder shall submit with its bid a current Classification/Prequalification Certificate and accompanying form(s) indicating the dollar amount of uncompleted contracts, and a notarized and itemized list of uncompleted contracts in the form, "Uncompleted Contracts Affidavit," provided at page B-20.

1.18 COMPLIANCE WITH LAWS

- A. The contractor shall comply with all State of New Jersey and federal laws as they pertain to the performance under the contract.

Prevailing Wages:

1. The New Jersey Prevailing Wage Law, N.J.S.A. 34:11-56.25 et seq. is hereby made a part of every contract entered into by the UCIA, except those, which are not within the scope of the Law. The successful bidder and its subcontractors shall be obligated to pay workers not less than the prevailing wage rate, to submit certified payrolls as documentation of compliance, and to permit on-site monitoring, including interviews with employees and review of subcontracts, by UCIA and State representatives. The bidder's signature on its proposal is its guarantee that neither bidder nor any of bidder's subcontractors employed to perform the work covered by this bid are listed or are on record as one who has failed to pay prevailing wages in accordance with the provisions of the New Jersey Prevailing Wage Law.
2. Every contractor and subcontractor shall keep an accurate payroll record, showing the name, craft or trade, job title or classification, actual hourly rate or wages paid, hours worked and total wages paid to each workman employed by the contractor in connection with a public work. Payroll records shall be preserved for a period of three (3) years from the date of payment.
3. In the event it is found that any worker employed by the contractor or any subcontractor covered by the contract has been paid a rate of wages less than the prevailing wage required to be paid by the contract, the UCIA 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.

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B. Equal Employment/Affirmative Action:

1. The successful bidder shall be required to complete and submit an Initial Project Workforce Report Construction, New Jersey Department of Treasury Form AA-201, upon notification of award.
2. The successful bidder shall also be required to submit a copy of its Monthly Project Workforce Report, New Jersey Department of Treasury Form AA-202, to the New Jersey Department of Treasury's Division of Public Contracts Equal Employment Opportunity Compliance and to the UCIA.
3. The successful bidder expressly agrees to comply with Titles VI and VII of the Civil Rights Act of 1964, as amended, and all other applicable federal, state and/or local laws, ordinances, rules, regulations and orders prohibiting discrimination in hiring or employment opportunities. Compliance is not delegable to any union, training program or other source of recruitment, which prevents the contractor from meeting his obligations
4. In the employment of persons for the performance of public work, no contractor or subcontractor nor any person acting on behalf of such contractor or subcontractor shall by reason of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, discriminate against any individual who is qualified and available to perform the work to which the employment relates.
5. The successful bidder shall agree that:
 - a. The successful bidder will be required to comply with the Affirmative Action laws and regulations, including but not limited to, *N.J.S.A. 10:5-31 et seq.* and *N.J.A.C. 17:27-1 et seq.*
 - b. Exhibit B, Mandatory Equal Employment Opportunity Language – Construction, at page B-22, shall be part of any contract awarded to the successful bidder.
 - c. In the hiring of persons for the performance of work under the 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 the contract, the successful bidder, and his subcontractors and all persons acting on their behalf, shall not, by reason of, age, race, creed, color, national origin, ancestry, marital status, affectional or sexual

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orientation, gender identity or expression, disability, nationality or sex, discriminate against any person who is qualified and available to perform the work to which the employment relates;

- d. The successful bidder, all subcontractors and all persons on their behalf shall not, in any manner, discriminate against or intimidate any employee engaged in the performance of work under the 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 age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.
- e. There may be deducted from the amount payable to the successful bidder by the UCIA under the contract a penalty of \$50.00 for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the contract by the successful bidder and the subcontractors or any person acting on their behalf;
- f. The contract may be canceled or terminated by the UCIA, and all money due or to become due under the contract may be forfeited for any violation of this Section 1.18 occurring after notice to the successful bidder/contractor from the UCIA of any prior violation of this Section.
- g. It shall be the successful bidder's (contractor's) responsibility to investigate the applicability of the Civil Rights Act of 1964 and the Americans with Disabilities Act of 1990 and to comply in all respects to the provisions thereof.

C. Use American Goods and Products, Where Available:

- 1. Bidders shall comply with the requirements of *N.J.S.A. 40A11-18* and use only manufactured and farm products of the United States, wherever available, for the project.

E. OSHA Compliance:

- 1. The contractor shall guarantee that all materials, supplies and equipment to be provided under the contract shall meet all applicable requirements, specifications and standards of the Federal Occupational Safety and Health Act (OSHA) of 1970 as amended to date of acceptance by the UCIA, and shall also apply to contractor's construction procedures.

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F. Applicable Laws:

1. It shall be the responsibility of the contractor alone to investigate and determine the applicability of any and all federal statutes, New Jersey statutes, local ordinances, rules, regulations, etc., as they affect and impact upon this project, and to take all necessary steps to assure the contractor's compliance with the aforementioned requirements. It is specifically stipulated and agreed by and between the UCIA and contractor that no liability or responsibility whatsoever will attach to the UCIA, architect or construction manager in the event of non-compliance with any federal statute, state statute, local ordinance, rule, regulation, etc.
2. The following list of statutes and regulations, which may be applicable in whole or in part, is provided for the benefit of the contractor and is **not meant to be all-inclusive**. In the event that other laws are applicable, it shall be the responsibility and obligation of the contractor to ascertain and comply with them.

2.1 New Jersey Statutes and Regulations

1. N.J.A.C. 17:27-1 *et seq.*, Affirmative Action
2. N.J.S.A. 52:38-1 *et seq.*, Project Labor Agreement
3. N.J.S.A. 34:11-56.25 *et seq.*, Prevailing Wage Act,
4. N.J.S.A. 34:32-44, Business Registration Certificate
5. N.J.S.A. 34:11-56.48 *et seq.*; N.J.A.C. 12:62-1.2 *et seq.*,
Contractor Registration Act
6. N.J.S.A. 52:25-24.2 Stockholder Certificate
7. N.J.S.A. 40A:11-25 Pre-classification of Bidders by NJDPMC

2.2 Federal Statutes

1. Immigration Control and Reform Act (1986) – 8 U.S.C.A. Section 1324(a) *et seq.*
2. Civil Rights Act of 1964 – 42 U.S.C.A. Section 1971 *et seq.*
3. The Americans with Disabilities Act of 1990.

1.19 PROJECT LABOR AGREEMENT

- A. Contractor shall abide by the terms of the Project Labor Agreement (PLA), at page B-40 (including obtaining the necessary and applicable Letters of Assent from subcontractors (of any tier). Through the Letters of Assent, the subcontractors (of any

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tier) also must be prepared to abide by the terms of the PLA. Contractor will be required to submit the Letters of Assent to the UCIA with the executed PLA.

1.20 EXAMINATION OF SITE, DRAWINGS AND SPECIFICATIONS

- A. Each bidder shall visit the site(s) of the proposed work during the pre-bid conference and site tour as indicated in the Notice to Bidders and fully acquaint itself with the conditions as they exist so that bidder may fully understand the facilities, difficulties, and restrictions attending the execution of the work under the contract.
- B. Bidders shall thoroughly examine and be familiar with the Bid Documents. The failure to receive or examine any form, instrument or document, or to visit the site and acquaint itself with conditions there existing shall in no way relieve any bidder from obligation with respect to its bid. By submitting a bid, the bidder agrees and warrants that it has examined the site, the Bid Documents, and that the specifications and drawings are adequate, and the required result can be produced under the drawings and specifications. No claim for any extra will be allowed because of alleged impossibilities in the productions of the results specified or because of unintentional errors or conflicts in the drawings and specifications. No change orders will be issued for items, materials or issues that existed on or with respect to the site prior to bidding.

1.21 DRAWINGS AND SPECIFICATIONS

- A. The project shall be performed in accordance with the requirements of the drawings and specifications, subject to modification as may be provided in General Conditions. The drawings and specifications are intended to complement and supplement each other.
- B. Any work required by either of them and not by the other shall be performed as if denoted in both. Should any work be required, which is not denoted in the specifications 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.

1.22 NUMBER AND TITLE OF DRAWINGS

- A. The number and title of drawings accompanying the specifications, which form a part of the Bid Documents and upon which the bids shall be based, are listed within the Project Manual.

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1.23 PRE-BID CONFERENCE

- A. A pre-bid conference to answer any questions pertaining to the Bid Documents will be held at the time and place designated in the Notice to Bidders. Questions concerning the Bid Documents may be posed in writing at any time as indicated in the Notice to Bidders. Questions received after that date will not be addressed.
- B. All interpretations and supplemental instructions given by the UCIA or its representatives at the pre-bid conference will be issued in the form of an addendum to the contract documents, which will be sent to all bidders. All such data shall become a part of the Bid Documents. Failure of any bidder to receive any addendum will not relieve the bidder from any obligation under its bid as submitted.
 - No addenda will be issued later than seven (7) days prior to the bid due date, except to extend the bidding due date.

1.24 BRAND NAME OR EQUIVALENT

- A. Whenever a material, article, or piece of equipment is identified in the Bid Documents by reference to manufacturer's name, trade names, catalogue numbers, etc., it is intended to establish a standard. Similar materials, articles, or equipment of other manufacturers of the same general design will be considered provided the Contractor complies with the Division 01 Section "Product Requirements." No substitution will be permitted without the Architects written approval.
- B. **Whenever in the Division specifications a manufacturer or product is listed, it shall mean that it includes but is not limited to such manufacturer or product.**

1.25 SUBCONTRACTS

- A. Bidder is specifically advised that any person, firm, or other party to whom it proposes to award a subcontract under the contract must be acceptable to the UCIA, and the Bidder shall furnish all information deemed necessary by the UCIA to determine the qualifications of the proposed subcontractor.

1.26 FORM OF AGREEMENT

- A. The contract to be entered into with the successful bidder will be subject to all statutory provisions on the matter of Public Works, The Law Against Discrimination, the laws governing Equal Employment Opportunity and Affirmative Action, Prevailing Wages, and all other applicable federal and State laws.

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- B. The contract shall be executed by the successful bidder not later than twenty-one (21) days from the date of award by the UCIA.

1.27 **MULTIPLE BIDS NOT ALLOWED**

No bidder is allowed to submit more than one bid from an individual, firm, partnership, corporation or association under the same or different name. This will be cause for automatic rejection of each bid.

1.28 **PUBLIC WORKS CONTRACTOR REGISTRATION ACT**

Contractors performing covered "public works" as defined by *N.J.S.A. 34:11-56.48 et seq.* must comply with the requirements of *N.J.A.C. 12:62-1.2, 2.1 and 2.2* (as amended) and described below:

Subchapter 1. General Provisions

12:62-1.2 Definitions

"Act" means "The Public Works Contractor Registration Act" ([N.J.S.A. 34:11-56.48 et seq.](#)) and the rules promulgated thereunder.

"Commissioner" means the Commissioner of Labor and Workforce Development or his or her duly authorized representatives.

"Contractor" means a person, partnership, association, joint stock company, trust, corporation, or other legal business entity or successor thereof who enters into a contract which is subject to the provisions of the New Jersey Prevailing Wage Act, P.L. 1963, c.150, [N.J.S.A. 34:11-56.25 et seq.](#), and includes any subcontractor or lower tier subcontractor of a contractor as defined in this section.

"Custom fabrication" means the fabrication of plumbing, heating, cooling, ventilation or exhaust duct systems and mechanical insulation.

"Department" means the Department of Labor and Workforce Development.

"Maintenance" means "maintenance work" as that term is defined at [N.J.S.A. 34:11-56.26](#), namely, the repair of existing facilities when the size, type or extent of such facilities is not thereby changed or increased.

"Public work" means construction, reconstruction, demolition, alteration, custom fabrication, or repair work, or maintenance work, including painting and decorating, done under contract and paid for in whole or in part out of the funds of a public body, except work performed under a rehabilitation program. "Public work" shall also mean construction, reconstruction, demolition, alteration, custom fabrication, or repair work done on any property or premises, whether or not the work is paid for from public

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funds, if, at the time of the entering into the contract the property or premises is owned by the public body or:

- 1. Not less than 55 percent of the property or premises is leased by a public body, or is subject to an agreement to be subsequently leased by the public body; and*
- 2. The portion of the property or premises that is leased or subject to an agreement to be subsequently leased by the public body measures more than 20,000 square feet.*

“Subcontractor” means any subcontractor or lower tier subcontractor of a contractor, including owner operators or independent contractors.

“Worker” includes a laborer, mechanic, skilled or semi-skilled laborer and apprentices or helpers employed by any contractor or subcontractor and engaged in the performance of services directly upon a public work, regardless of whether their work becomes a component part thereof, but does not include material suppliers or their employees who do not perform services at the job site. For the purposes of these rules, contractors or subcontractors engaged in custom fabrication shall not be regarded as material suppliers.

12:62-2.1 Registration Required

(a) No contractor shall bid on any contract for public work unless the contractor is registered pursuant to the Prevailing Wage Act. In addition:

- 1. No contractor shall list a subcontractor in a bid proposal for a public works contract unless the subcontractor, as required, is registered pursuant to the terms of N.J.S.A. 34:11-56.48 et seq., the Public Works Contractor Registration Act, at the time the bid is submitted to the public entity; and*
- 2. No contractor or subcontractor not listed on the bid proposal shall engage in the performance of any public work project unless the contractor or subcontractor is registered pursuant to the Act.*

(b) Any contractor which seeks to register under the Act shall apply to the Division of Wage and Hour Compliance, within the Department of Labor and Workforce Development. For this purpose, the Department shall prepare a “New Jersey Department of Labor and Workforce Development Application for Public Works Contractor Registration.” This form shall be available from the Department.

(c) As part of its application to the Department, a contractor shall provide all required information and documents requested by the Application for Public Works Contractor Registration. The information to be submitted for review shall include:

- 1. The name, principal business address, telephone and fax number as well as any e-mail address of the business;*
- 2. Whether the contractor or subcontractor is a corporation, partnership, sole proprietorship, or other form of a business entity;*
- 3. The name and address of the custodian of records and agent for service of process within the State of New Jersey;*

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4. *The name, addresses of residence, and telephone number of each person with a financial interest in the business and the percentage of interest, except that if the business is a publicly traded corporation, the contractor shall supply the names and addresses of residence of the corporation's officers;*

5. *The business' Federal Employer Identification Number and State of New Jersey Taxpayer Identification Number;*

6. *A history of previous and/or current labor law violations and the final dispositions of such violations and any violations, or pending violations, brought by a governmental entity of criminal or civil statutes and/or regulations which would reflect upon the fitness of the applicant/contractor to bid on or engage in public work projects;*

7. *Proof of workers' compensation insurance; and*

8. *Any other relevant and appropriate information from a particular applicant as determined by the Commissioner*

(d) *The contractor shall pay an initial, non-refundable, annual registration fee of \$300.00 to the Commissioner. The non-refundable fee for the second annual registration shall be \$300.00. Upon successful completion of two consecutive years of registration, a contractor may elect to register for a two-year period and pay a non-refundable registration fee of \$500.00. However, a two-year registration will only be granted if the applicant has not violated the Act and/or the Prevailing Wage Act or these rules during the period of licensure preceding submission of the renewal application.*

(e) *An applicant shall fully and accurately complete all relevant parts of the Application for Public Works Contractor Registration. Failure to provide a complete application shall result in rejection.*

(f) *An applicant who fails to provide specifically requested additional information or documentation shall be considered not in compliance with the Act and shall be subject to rejection.*

(g) *If the applicant knowingly supplies incomplete or inaccurate information to the Department in connection with his or her application, he or she shall be disqualified under these rules, barred from reapplying for registration for a period of up to one year from the date of notice of disqualification, and may be subject to other penalties described in [N.J.A.C. 12:62-2.3](#), [2.4](#) and [2.5](#).*

12:62-2.2 Issuance and term of a certificate of registration

(a) *Upon receipt of the fee, a fully completed form and all documentation required under [N.J.A.C. 12:62-2.1](#), the Commissioner shall issue a certificate of registration to the contractor within 30 days.*

(b) *An initial certificate of registration shall be valid only for a period of one calendar year from the date of registration.*

(c) *Registration shall be renewed not less than 30 calendar days prior to the expiration date of the immediately preceding registration. However, renewal shall be predicated*

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upon the contractor not having knowingly or willfully violated the provisions of the Act or of the New Jersey Prevailing Wage Act during the period of licensure preceding the renewal application.

(d) Each contractor shall, after the bid is made and prior to the awarding of the public works contract, submit to the public entity for whom the work is to be performed the certificates of registration for all subcontractors listed in the bid proposal.

(e) A certificate of registration shall not be transferable.

(f) A registered contractor who allows his or her contractor registration certificate to expire prior to attempting to renew same, must subsequently apply for a registration certificate as if for the first time.

1.29 BUSINESS REGISTRATION CERTIFICATE (N.J.S.A. 52:32-44)

- A. Business Registration: All for-profit New Jersey business organizations and foreign business organizations doing business in the State of New Jersey are required to obtain a Business Registration Certificate from the State of New Jersey Department of Treasury, Division of Revenue prior to conducting business in the State of New Jersey. "Business organization" means an individual, partnership, association, joint stock company, trust, corporation, or other legal business entity or successor thereof.
- B. Proof of valid business registration with the State of New Jersey Department of Treasury, Division of Revenue shall be submitted by the bidder in the form of a valid Business Registration Certificate prior to the time a contract is awarded. The successful bidder must include proof of its own business registration and proof of the business registrations of those subcontractors required to be listed in the bid pursuant to N.J.S.A. 40A:11-16.
- C. 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 the contract, the contractor and each of its affiliates and each subcontractor and each of its affiliates, as defined in N.J.S.A. 52:32-44, shall collect and remit to the Director, New Jersey Division of Taxation, the sales and/or use tax due pursuant to the Sales and Use Tax Act 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.

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1.30 PAY TO PLAY

- A. Pursuant to *N.J.S.A.* 19:44A-20.27, contractors doing business with public entities must file an annual disclosure statement of political contributions with the New Jersey Election Law Enforcement Commission (ELEC) if they receive contracts in excess of \$50,000 per year from public entities. Bidders are responsible for determining whether a filing with ELEC is necessary. Additional information on this matter may be obtained from ELEC at 888-313-3532 or at www.elec.state.nj.us.

1.31 PUBLIC INFORMATION

- A. Any and all information submitted with or, where permitted by law, submitted subsequent to the bids, will be considered public information subject to disclosure to the public. Submission of a bid will constitute a full waiver by bidder of any right to confidentiality with regard to information that is submitted with the bid or subsequently provided to the UCIA pursuant to the requirements of the bid documents. However, if bidder chooses to include material of a proprietary nature in its bid, the UCIA will attempt to keep such material confidential to the extent permitted by applicable law. The bidder must specifically identify each page of its bid that contains such information by properly marking the applicable pages. Preferably, any sections which contain material of a proprietary nature shall be severable or removable from the bid to assist the UCIA in protecting this information. The bidder shall include the following notice in the introduction of the relevant section:

"The data on pages ___ identified by ___ (symbol) and labeled "Proprietary Information," contain information that is a trade secret and/or which, if disclosed, would cause substantial injury to bidder's competitive position. (Insert Name of Bidder) requests that such data be used only for the evaluation of its bid, and understands that disclosure will be limited only to the extent that the UCIA determines it proper or to the extent that the UCIA deems disclosure necessary according to law. If an award is made under this bid, the UCIA will have the right to use or disclose the data as permitted or required by law."

The UCIA will seek to prevent the unauthorized disclosure of this information in applying the proprietary standard to marked data. However, the UCIA assumes no liability for any loss, damage, or injury that may result from any disclosure or use of marked data or any disclosure of this or other information.

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1.32 LIQUIDATED DAMAGES

- A. **Liquidated Damages:** If the project is not completed within the time specified herein or within such further time as may have been granted by the UCIA, the contractor hereby agrees to pay to the UCIA as liquidated damages, but not as a penalty, \$1,500 per day for each and every calendar day that contractor is in default on the time to complete the project. Liquidated damages will be deducted from moneys due the contractor and if the damages exceed such amount, the contractor and/or its surety will be liable to pay the excess.
- B. **Liquidated Damages for (21) Day Office Shutdown:** If the work outlined for the (21) day Office Shutdown in section “011000 – Summary section 1.5 Work Covered by Contract Documents” is not completed within the time specified herein or within such further time as may have been granted by the UCIA for the 21 day shut down, the contractor hereby agrees to pay to the UCIA as liquidated damages for spaces that are not conditioned, but not as a penalty the following sum per calendar month per tenant who may not resume use of the office space:

JP Morgan Chase = **\$8,945.00 per Month**

Dental Health Associates = **\$17,070.00 per Month**

Office of Legislative Services = **\$3,900.00 per Month**

The Community Health Group (JFK Medical) = **\$3,480.00 per Month**

United Way of Greater Union County = **\$1,350.00 per Month**

State of New Jersey – DCA = **\$9,240.00 per Month**

Union County Learning Link = **\$5,640.00 per Month**

State of New Jersey – Workers Comp = **\$20,070.00 per Month**

State of New Jersey – DOL = **\$8,220.00 per Month**

County of Union = **\$59,200.00 per Month**

State of New Jersey – DOL = **\$85,833.00 per Month**

(1) One day beyond the (21) day office shutdown will constitute (1) one calendar month. Liquidated damages will be deducted from moneys due the contractor and if the damages exceed such amount, the contractor and/or its surety will be liable to pay the excess. See section “1.6 WORK PHASING” in specification “011000 – SUMMARY” for an outline of the work required to be completed.

1.33 INSURANCE REQUIREMENTS

The UCIA requires all bidders to comply with the insurance requirements set forth in the Supplementary Condition to the Contract. A certificate of insurance evidencing the required coverage and amounts must be filed with the UCIA at the time of execution of the contract and prior to commencement of any work.

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BIDDERS CHECKLIST

BIDDER'S NAME _____

Items 1 through 27 are the forms which must be completed and/or provided in **TRIPLICATE (original and two copies)** with the Bid.

BIDDER MUST INITIAL EACH ENTRY AND SIGN AND DATE THIS FORM.

Bidder's Initials

1.	This Bidder's Checklist	_____
2.	Bid Form, Pages B-3 to B5	_____
3.	** Bid Security in the form of Certified Check, Cashier's Check or Bid Bond; see Page B-6	_____
4.	** Consent of Surety, Page B-7 (See sample Performance/Payment Bond at Page B-8)	_____
5.	** Ownership Disclosure Statement, Page B-10	_____
6.	Plumbers Compliance Affidavit, Page B-12	_____
7.	Hold Harmless Clause, Page B-13	_____
8.	Non-Collusion Affidavit, Page B-14	_____
9.	** Acknowledgement of Receipt of Addenda to Bid Documents, Page B-15	_____
10.	** List of Subcontractors as required by N.J.S.A.40A:11-16, Page B-16	_____
11.	** ~~Certified Financial Statement prepared within last 12 months (See Page B-17)~~ (Omitted)	_____
12.	Public Contractors Registration Act Certificate for Contractor and Subcontractors listed in N.J.S.A.40A:11-16. See N.J.S.A. 34:11-56-48	_____
13.	Business Registration Certificate for Contractor and Subcontractors listed in N.J.S.A. 40A:11-16. See N.J.S.A. 52:32-44; see also Page B-19	_____
14.	N.J. Div. of Property Management & Construction (DPMC) Certificate/ Notice of Classification	_____
15.	Uncompleted Contracts Affidavit, Page B-20	_____
16.	Affirmative Action Compliance, Page B-21	_____
17.	Certificate of Bidder Showing Ability to Perform Contract, Page B-26	_____

[Continued on next page]

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BIDDERS CHECKLIST (Continued)

BIDDER'S NAME _____

18.	Equipment Statement, Page B-27	_____
19.	Americans with Disability Act Language, Page B-28	_____
20.	Statement of Bidder's Qualifications, Page B-30	
21.	Contractor Performance Record, Page B-33	_____
22.	Affidavit Regarding List of Debarred, Suspended or Disqualified Bidders, Page B-36	_____
23.	Certificate of Insurance Statement, Page B-37	_____
24.	Acknowledgement of PLA, Page B-38	_____
25.	Time of Completion, Page B-70	_____
26.	Agreement for Use of Bid Documents in Electronic Form, Page B-71	_____

** Failure to submit any of these items will result in MANDATORY rejection of the bid; failure to submit with the bid cannot be cured. Failure to submit any of the unstarred items may result in rejection of the bid.

The undersigned hereby acknowledges the above-listed requirements.

NAME OF BIDDER:

Person, Firm, or Corporation

Signature

Title

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Bidder's Name _____
BID FORM

Having inspected the site of the Work, the undersigned will furnish all labor, material, equipment and services necessary for the complete construction of the **Gerry B. Green Plaza Alterations**, as defined in the Bid Documents, for the contract amount indicated below, in strict accordance with the Bid Documents:

BASE BID ITEM:
(Identified individually for accounting and invoicing purposes)

_____	_____
Words	Figures

BID CONTINGENCY: (To be used if and when directed by the Union County Improvement Authority)

<u>Three Hundred and Fifty Thousand Dollars</u>	<u>\$350,000.00</u>
Words	Figures

TEMPORARY CONDITIONING CONTINGENCY: (To be used if and when directed by the Union County Improvement Authority)

<u>Seventy Thousand Dollars</u>	<u>\$70,000.00</u>
Words	Figures

TOTAL BASE BID PLUS CONTINGENCIES:

_____	\$ _____
Words	Figures

ALTERNATE PRICES

ADD ALTERNATE #1 – Elevator Modernization: Modernize three existing elevator controls and devices per the contract documents.

_____	\$ _____
Additional Cost - Words	Additional Cost - Figures

ALTERNATE # 1 - ELEVATOR CONTINGENCY: (To be used if and when directed by the Union County Improvement Authority)

<u>Fifty Thousand Dollars</u>	<u>\$50,000.00</u>
Words	Figures

TOTAL ALTERNATE #1 BID PLUS ALTERNATE #1 CONTINGENCIES:

_____	\$ _____
Words	Figures

[Continued on next page]

ADD ALTERNATE #2 – Interior Painting: County and Additional Tenant wall painting to be performed as indicated on the architectural floor plans.

	\$
Additional Cost - Words	Additional Cost - Figures

ADD ALTERNATE #3 – Ceiling Tile Replacement: Replace ceiling tiles and paint ceiling grid as indicated on the architectural floor plans.

	\$
Additional Cost - Words	Additional Cost - Figures

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name _____

BID FORM (continued from B-3)

**Gerry B. Green Plaza Alterations
200 West 2nd Avenue, Plainfield, New Jersey**

Bidder's Name _____

BID FORM (continued from B-3)

Further, the undersigned agrees, if awarded the contract, to execute an agreement for the above stated Work on the Standard Form of Agreement Between Owner and Contractor, AIA Document A132 - 2019/Construction Manager as Advisor Edition. The undersigned also agrees, if awarded the contract, that Bidder will pay the UCIA \$1,500 per day for each calendar day beyond the completion Date that is set forth in the schedule provided in the Bid Documents and further agrees to the liquidated damages to be applied to the (21) day office shutdown.

The undersigned acknowledges that, during the progress of the Work or delivery of the materials to be furnished, two percent (2%) of the contract price shall be retained until said work is fully completed and accepted (including all punch list items, delivery of warranties and submission and acceptance of all contract close out documentation).

The undersigned, acting through its authorized officers and intending to be legally bound, agrees that this bid proposal shall constitute an offer by the undersigned to enter into a contract with the acts and things therein provided, which offer shall be irrevocable for sixty (60) calendar days from the date of opening hereof and that the Owner may accept this offer at any time during said period by notifying the undersigned of the acceptance of said offer.

No member, employee or officer of the Gerry B. Green Plaza Alterations or the Union County Improvement Authority is directly interested in this proposal, or in the supplies or work to which it relates, or to any portion of the profits thereof

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates, and hours of labor set forth in the contract documents.

NAME OF BIDDER

ADDRESS OF BIDDER

BY: _____
 ORIGINAL SIGNATURE

**ORIGINAL SIGNATURE OF
CORPORATE SECRETARY**

PRINT NAME OF CORP. SECTY

PRINT NAME

[Corporate Seal]

TITLE

FAX: _____

E-Mail: _____

Phone: _____

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

BID FORM (continued from B-4)

NOTE:

1. If doing business under a **trade name, partnership or a sole proprietorship**, you must submit the bid under exact title of the trade name, partnership, or proprietorship, and the bid must be signed by either the **owner**, or a **partner** and **witnessed** by a **notary public**.
2. If a **Corporation**, the bid must be signed by the **President** or **Vice President** and **witnessed** by a **Corporate Secretary** (corporate title must be exact) and **affix corporate seal**. If a Corporate Secretary does not exist, President or Vice President's signature shall be witnessed by a Notary Public.
3. Other persons **authorized** by **corporate resolution** to execute agreements on its behalf may also sign the bid documents. **Copy of a resolution must accompany the bid.**
4. The person who signs this bid form **must also** sign the **Non-Collusion Affidavit**.
5. You **cannot** witness your own signature.

SAMPLE BID BOND FORM

THIS SAMPLE BID BOND CONTAINS LANGUAGE THAT IS ACCEPTABLE TO THE UCIA; ANY LANGUAGE THAT LIMITS THE BID BOND TO THE DIFFERENCE BETWEEN THE BID AMOUNT AND SUCH LARGER AMOUNT FOR WHICH THE UCIA COULD CONTRACT SHALL NOT BE ACCEPTABLE

THIS BOND, made this _____ day of _____, 2022.

WITNESSETH:

KNOW ALL MEN BY THESE PRESENT, that we, the undersigned,

_____, as Principal and

_____, as

Surety, are held firmly bound unto the Union County Improvement Authority, as Owner, in the sum of Ten Percent (10%) of

Amount of Bid, but in no case in excess of \$20,000, for the payment of which we hereby jointly and severally bind ourselves,

our heirs, executors, administrators, successors and assigns.

The condition of the above is such that whereas the Principal has submitted to the Union County Improvement Authority a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing for

_____.

NOW, THEREFORE,

- (a) If said Bid be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Agreement attached hereto (properly completed in accordance with said Bid), and shall in all other respects perform the agreement created by the acceptance of said Bid,

Then this obligation shall be null and 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 amount of this obligation as herein stated.

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

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

by Principal: _____ by Surety: _____

NOTE: POWER OF ATTORNEY OF OFFICERS OF SURETY COMPANY DEMONSTRATING AUTHORITY TO EXECUTE THE BID BOND MUST BE SUBMITTED WITH THE BID BOND.

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

**CONSENT OF SURETY
TO ACCOMPANY PROPOSAL (BID)**

_____ (hereinafter called Surety), organized and existing under the laws of the State of _____ duly authorized and qualified to transact business in the State of New Jersey, in consideration of the sum of One Dollar (\$1.00), lawful money of the United States of America, to it in hand paid, receipt whereof is hereby acknowledged, and in consideration, hereby certifies and agrees that if the contract for which the attached proposal is made be awarded to _____ (hereinafter called Contractor) for the performance of certain work and labor or the supplying of certain materials, or both, as more particularly set forth in said proposal and described for purposes of this instrument as a proposal to the Union County Improvement Authority (UCIA) for the Gerald B. Green Building Systems Alterations

- Alteration and Addition, and if Contractor shall enter into the contract, Surety will become bound as surety for its faithful performance, and labor and material payment, and will provide the Contractor with a performance, labor and material payment bond in the full amount of the contract price.

NAME OF SURETY

ADDRESS: _____

By: _____

ORIGINAL SIGNATURE - ATTORNEY-IN-FACT FOR SURETY CO.

**NOTE: POWER OF ATTORNEY OF OFFICERS OF SURETY COMPANY DEMONSTRATING AUTHORITY
TO EXECUTE THIS DOCUMENT MUST BE SUBMITTED.**

SAMPLE PERFORMANCE/PAYMENT/WARRANTY BOND
Consolidated Bond Form

- A. **Performance Bond**
B. **Payment of Labor & Material Bond**
C. **1-Year Warranty**

KNOW ALL MEN BY THESE PRESENT THAT WE, the undersigned, _____

as Principal, and _____

as the Surety, are held and firmly bound unto the Union County Improvement Authority, hereinafter called "the Union County Improvement Authority," and as hereinafter set forth, in the full and just several sum of

(a) _____ Dollars (_____)

for faithful performance of the contract as designated in Paragraph "A" and

(b) _____ Dollars (_____)

for payment of labor and materials as designated in Paragraph "B"

(c) _____ Dollars (_____)

to guarantee remedy of defects as designated in Paragraph "C" lawful money of the United States of America, to be paid to the Union County Improvement Authority or its assigns, to which payment well and truly to be made and done, we bond ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

Sealed with our respective seals and dated this ____ day of _____ 20__.

WHEREAS, the above bounden Principal has entered into a contract with the Union County Improvement Authority, bearing even date herewith, for Contract No. _____

_____ upon certain terms and conditions in said contract more particularly mentioned, and:

WHEREAS, it is one of the conditions of the award of the Union County Improvement Authority pursuant to which said contract is about to be entered into, that these presents be executed.

NOW THEREFORE, the joint and several conditions of this obligation are such:

"A" – That if the above bounden Principal as Contractor shall well and faithfully do and perform the things agreed by him to be done and performed according to the terms of the said Contract therein referred to and made a part thereof and such alterations as may be made in said work as therein provided and which are hereby made a part of this Bond the same as though they were set forth herein, and shall indemnify and save harmless the said Union County Improvement Authority and all of its officers, agents and employees from any expenses incurred through the failure of said Contractor and any of its subcontractors to complete the work as specified and for any damages growing out of the manner of performance of said Contract by said Contractor or his subcontractors or his or their agents or servants, including patent, trademark and copyright infringements; then this part of this obligation shall be void; otherwise it shall be and remain in full force and effect.

"B" – That if the above bounden Principal shall and will promptly pay or cause to be paid, all sums of money which may be due any person, co-partnership, association or corporation including any subcontractors for all material furnished and labor supplied or performed in the prosecution of the work, whether or not the said material or labor enter into and become component parts of the work or improvement contemplated, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

"C" – That if the above bounden Principal shall remedy without cost to the said Union County Improvement Authority any defects which may develop during the period of one (1) year from date of completion and acceptance of the work performed under said Contract, provided such defects, in the judgment of the Union County Improvement Authority or its successors, are caused by defective or inferior materials or workmanship, then this obligation shall be void; otherwise it shall be and remain in full force and effect.

It is further agreed that any alterations which may be made in the terms of the contract or in the work to be done or materials to be furnished or labor to be supplied or performed under it or the giving by the Union County Improvement Authority of any extension of time for the performance of the contract or any other forbearance on the part of either the Union County Improvement Authority or the Principal and the Surety or Sureties or either or any of them, their heirs, executors, administrators, successors or assigns, from their liability hereunder, notice to the Surety or Sureties or any such alterations, extension, or forbearance being hereby waived.

The Principal and Surety hereby jointly and severally agree with the obligee herein that every person, co-partnership, association or corporation who, whether as subcontractor or otherwise, has furnished material or supplied or performed labor in prosecution of the work as above provided and who has not been paid therefor, may sue in assumpsit of this bond in the name of the Union County Improvement Authority for his, their, or its use, prosecute the same to final judgment for such sum or sums as may be justly due him, them, or it and have execution thereon; provided, however, that the Union County Improvement Authority shall not be liable for the payment of any costs or expenses of any such suit and further provided that the subcontractors or otherwise shall not have the right to sue or bring action against the Union County Improvement Authority directly.

IN WITNESS WHEREOF, the said Principal and Surety have duly executed this bond under seal the day and year above written.

WITNESS:

(Principal)

BY: _____
(Signature of Principal)

(Type Name and Title of
Principal's Signatory)

(Type Name of Surety Co.)

BY: _____
(Signature of Attorney-in-Fact)

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

OWNERSHIP DISCLOSURE STATEMENT

N.J.S.A. 52:25-24.2 (P.L. 1977 c. 33)

CHECK ONE

- ☐ I certify that the list below contains the names and home addresses of all stockholders holding 10% or more of the issued and outstanding stock of the undersigned or of all partners/principals owning 10% or more of the undersigned.

OR

- ☐ I certify that no one stockholder owns 10% or more of the issued and outstanding stock of the undersigned or that no one partner/principal owns 10% or more of the undersigned.

If a corporation owns all or part of the stock of the corporation or partnership submitting the bid, then the statement shall include a list of the stockholders who own 10% or more of the stock of any class of that owning corporation. If no one owns 10% or more stock, attest to that.

Check the box that represents the type of business organization:

☐ Partnership	☐ Corporation	☐ Sole Proprietorship
☐ Limited Partnership	☐ Limited Liability Corporation	☐ Limited Liability Partnership
☐ Subchapter S Corporation		

Complete if Bidder is one of the 3 types of corporations:

Date Incorporated: _____ **Where Incorporated:** _____

All Bidders:

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

Stockholders/Partners/Principals:

Name: _____

Name: _____

Home Address: _____

Home Address: _____

[Continued on next page]

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

OWNERSHIP DISCLOSURE STATEMENT (Continued from B-10)

N.J.S.A. 52:25-24.2 (P.L. 1977 c. 33)

Name: _____

Home Address: _____

Name: _____

Home Address: _____

Name: _____

Home Address: _____

Name: _____

Home Address: _____

Name: _____

Home Address: _____

Name: _____

Home Address: _____

NAME OF BIDDER: _____

*Subscribed and sworn before me this ____ day of
_____, 2__.*

(Notary Public)

My Commission expires:

By: _____
(Affiant)

(Print name & title of affiant)

(Corporate Seal)

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

AFFIDAVIT OF COMPLIANCE **PLUMBING CONTRACTOR**

Public Law 1987, Chapter 442 (N.J.S.A. 45:14C-2) defines Plumbing Contractor as a licensed master plumber that shall be the holder of not less than 10% of the issued and outstanding shares of stock in the corporation, or not less than 10% of the capital of the partnership, or not less than 10% of the ownership of any other firm or legal entity engaging in the business of plumbing contracting in the State and shall employ either journeyman, plumbers or apprentice plumber or both.

Due to the enactment of Public Law 1987, Chapter 442, Plumbing Subcontractor listed in the Bid pursuant to N.J.S.A. 40A:11-16 must certify the following:

I certify that I own not less than (____) 10% of the issued and outstanding shares of stock in the plumbing subcontractor company set forth below, or not less than (____) 10% of the capital of the partnership, or not less than (____) 10% of the ownership of any other firm or legal entity.

I certify that the foregoing statements made by me are true. I am aware that if any of the foregoing statements made by me is willfully false, I am subject to punishment.

NAME OF PLUMBING SUBCONTRACTOR

SWORN AND SUBSCRIBED TO
BEFORE ME THE _____ DAY
OF _____, 20____

Signature of Notary Public
Notary Public of _____
My Commission expires _____

SIGNATURE OF MASTER PLUMBER

PRINT NAME OF MASTER PLUMBER

TITLE

NAME OF BIDDER FOR WHOM THE WORK WILL BE DONE:

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

HOLD HARMLESS CLAUSE

- A. The Contractor shall indemnify and save harmless the Union County Improvement Authority, the County of Union, the Gerald B. Green Building Systems Alterations, their elected and appointed officers, professionals, consultants, agents and employees, including their individual members, and the Architect and Construction Manager, and their employees and agents (collectively, the "Indemnified Parties"), from and against all losses, claims, demands, payments, suits, actions, recoveries, and judgments of every nature and description brought against or recoverable from the Indemnified Parties, including attorney's fees, by reason of any act or omission of the Contractor, its agents, employees, assigns, subcontractors and any entity acting in the Contractor's behalf and on the Contractor's direction in the execution of any work for the project, and any activities directly or indirectly incidental thereto. This specifically includes any negligence or carelessness of the Contractor in failing to review all plans, specifications, and other documents published by the Indemnified Parties in connection with the preparation and award of the contract.
- B. The Contractor shall assume all risk and bear any loss or injury to the property or any person which is caused by Contractor's negligence, including its negligent failure to notify the Indemnified Parties of any dangerous condition requiring the Indemnified Parties' action, during the progress of the work provided for in the contract, including periods when the Contractor is not present on the site, until the work shall have been completed and accepted. The Contractor shall also assume all responsibility for any and all loss by reason of the Contractor's negligence or violation of any local, state, or federal law, regulation, practice, or order. The Contractor shall give the Union County Improvement Authority and all other appropriate authorities all required notices relating to the work provided for in the contract, including all notices of dangerous conditions.
- C. The Contractor, in executing the agreement for the work, represents to the Indemnified Parties that the contents of this hold harmless clause have been communicated to its subcontractors and employees and that this representation is made on behalf of both the Contractor and all persons and entities acting in the Contractor's behalf including subcontractors and employees.

ATTEST:

Name of Bidder

By: _____

Print Name: _____

Title: _____

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

Bidder's Name _____

NON-COLLUSION AFFIDAVIT
(N.J.S.A. 52:34-15)

STATE OF _____)
)
COUNTY OF _____)

SS:

I _____, of the municipality of _____, in the County of _____, and the State of _____, of full age, being duly sworn according to law, on my oath depose and say that: I am _____ of the firm of _____, the bidder making the proposal for the above named project, and that I executed the said proposal for the above named project, and that I executed the said proposal with full authority to do so; that said bidder has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said proposal and in this Affidavit are true and correct, and made with full knowledge that the UNION COUNTY IMPROVEMENT AUTHORITY relies upon the truth of the statements contained in said proposal and in the statements contained in this Affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employees or bonafide established commercial or selling agencies maintained by the Bidder, _____ (N.J.S.A. 52:34-15).

NAME OF BIDDER

SIGNATURE

TITLE

NOTE: This Affidavit must be executed by the same person who signed the BID FORM (pages B-3 to B-5).

Subscribed and sworn before me
this ____ day of ____, 20____.

Notary Public of the State of _____
My commission expires: _____

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Avenue, Plainfield, New Jersey

Bidder's Name _____

ACKNOWLEDGMENT OF RECEIPT OF ADDENDA

Pursuant to N.J.S.A. 40A:11-23.2(e), the undersigned bidder, hereby acknowledges receipt of the following notices, revisions, or addenda to the bid advertisement, specifications or bid documents. By indicating date of receipt, bidder acknowledges the submitted bid takes into account the provisions of the notice, revision or addendum. Note that the UCIA's record of notice to bidders shall take precedence and that failure to include provisions of changes in a bid proposal may be subject for rejection of the bid.

Local Unit Reference Number or Title of Addendum/Revision	How Received (mail, fax, pick- up, etc.)	Date Received

IF NO ADDENDA ISSUED, INSERT "NONE" HERE: _____

ACKNOWLEDGMENT BY BIDDER:

NAME OF BIDDER: _____

SIGNATURE: _____

PRINTED NAME AND TITLE: _____

DATE: _____

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

SUBCONTRACTOR IDENTIFICATION STATEMENT

LIST OF SUBCONTRACTORS

*This form is **ONLY** required for plumbing and gas fitting, steam and hot water heating and ventilating apparatus, steam power plants, electrical work, structural steel, ornamental iron work, and any other trades required to be identified by the specifications if bidder is not using any subcontractors, certify below.*

In compliance with N.J.S.A. 40A:11-16 and the bid specifications, the undersigned hereby lists the name or names of the following subcontractors:

Company Name: _____
Address: _____
Telephone: _____ Subcontract Amount: \$ _____
Description of Work Subcontracted: _____
License No. _____

Company Name: _____
Address: _____
Telephone: _____ Subcontract Amount: \$ _____
Description of Work Subcontracted: _____
License No. _____

Company Name: _____
Address: _____
Telephone: _____ Subcontract Amount: \$ _____
Description of Work Subcontracted: _____
License No. _____

NAME OF BIDDER

Date _____

ADDRESS

By:

PRINT NAME AND TITLE

IF MORE THAN THREE SUBCONTRACTORS, PLEASE COPY THIS SHEET AS NECESSARY AND SUBMIT ALL SHEETS WITH BID.

(THIS FORM HAS BEEN DELETED)

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

FINANCIAL STATEMENT

as of _____ **2022**

NAME _____ RESIDENCE _____
OCCUPATION _____ BUSINESS _____
OR PROFESSION _____ ADDRESS _____

I make the following statement of all my assets and liabilities at the close of business on the date indicated above

(Name and Location of Financial Institution)

and give other material information for the purpose of obtaining advances on notes and bills bearing my signature, endorsement guaranty, and for obtaining credit upon present and future applications.

ASSETS

LIABILITIES and NET WORTH

Cash on Hand \$	Notes Payable to Banks-Unsecured \$ Direct borrowings only
Cash in Banks	Notes Payable to Banks-Secured Direct borrowings only
Notes Receivable	Notes Payable to Others-Unsecured
Accounts Receivable	Notes Payable to Others-Secured
Loans Receivable	Accounts Payable
Life Insurance-Cash Surrender Value (Do not deduct loans)	Loans against Life Insurance
Securities-Readily Marketable U.S. Govt. & listed on Stock Exchanges	Real Estate Mortgages Payable
Securities-Not Readily Marketable Unlisted stocks & bonds	Real Estate Taxes & Assessments Payable
Mortgages Owned	Federal & State Income Taxes
Real Estate Owned	Other Taxes
Automobile(s) Registered in own name	Interest Payable on loans, mortgages, etc.
Other Assets (Itemize)	Brokers Margin Accounts
	Other Liabilities (Itemize)
	Net Worth
TOTAL ASSETS	TOTAL LIABILITIES & NET WORTH

(THIS FORM HAS BEEN DELETED)

Certification – This is to certify that all the statements contained herein and in any supporting schedules are true and give a correct showing of any financial condition as of the date indicated. I further certify that I had no liabilities, direct or contingent, business or accommodation, except as set forth in this statement, and that the title to all assets therein set forth is in my name: Solely, except as may be otherwise noted. IN THE EVENT OF ANY MATERIAL ADVERSE CHANGE IN MY FINANCIAL CONDITION, I AGREE TO NOTIFY THE FINANCIAL INSTITUTION NAMED HEREIN IMMEDIATELY IN WRITING.

Signed this _____ day of _____, 20_____

(Signature)

NOTE: IF YOU ARE ENCLOSING AN ANNUAL REPORT OR AUDITOR'S REPORT IN CONNECTION WITH YOUR BID IN LIEU OF COMPLETING THE SAMPLE "FINANCIAL STATEMENT" INCLUDED IN THE BID PACKAGE, PLEASE SIGN THE CERTIFICATION STATEMENT LISTED BELOW AND ATTACH TO THE ANNUAL/AUDITOR'S REPORT.

CERTIFICATION: This is to certify that all the statements contained herein and in any supporting schedules are true and give a correct showing of my financial condition as of the date indicated. I further certify that I had no liabilities, direct or contingent, business or accommodation, except as set forth as in my name solely, except as may be otherwise noted.

Signed this _____ day of _____, 2022.

Signature

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

BUSINESS REGISTRATION

P.L. 2009, c.315, requires that effective January 18, 2010; a contracting agency must receive proof of the bidder's business registration prior to the award of a contract. However, the proof must show that the bidder was in fact registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

If subcontractors are named on the bid, proof of the business registration for each must be provided prior to the award of a contract. Similarly to the bidder, the proof must show that each subcontractor was registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

Proof of business registration shall be:

- A copy of a Business Registration Certificate issued by the Department of Treasury, Division of Revenue; or
- A copy of the web printed version provided by the NJ Division of Revenue

Register online at www.nj.gov/treasury/revenue/taxreg.htm. Click the "online" link and then select "Register for Tax and Employer Purposes or call the Division at 609-292-1730.

Note: A NJ Certificate of Authority is not acceptable.



STATE OF NEW JERSEY BUSINESS REGISTRATION CERTIFICATE	
Taxpayer Name:	TAX REG TEST ACCOUNT
Trade Name:	
Address:	847 ROEBLING AVE TRENTON, NJ 08611
Certificate Number:	1093907
Date of Issuance:	October 14, 2004
For Office Use Only: 20041014112813533	

ATTACH BRC HERE

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

UNCOMPLETED CONTRACTS AFFIDAVIT

PURSUANT TO N.J.A.C. 17:19-2.13, BIDDER DECLARES THE FOLLOWING WITH RESPECT TO ITS UNCOMPLETED CONTRACTS, ON ALL WORK, FROM WHATEVER SOURCE (PUBLIC AND PRIVATE), BOTH IN NEW JERSEY AND FROM OTHER GOVERNMENTAL JURISDICTIONS

Entity	Project Title	Original Contract Amount	Uncompleted Amount As Of Bid Opening Date	Name and Telephone Number of Party to be Contacted From Entity For Verification

TOTAL AMOUNT OF UNCOMPLETED CONTRACTS \$ _____

Sworn and Subscribed to Before me
this _____ day of _____, 20__

Notary Public

BIDDER:

(Signature)

(Print Name)

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

AFFIRMATIVE ACTION COMPLIANCE

General Requirements of P.L. 1975, c. 127 – The undersigned bidder is hereby put on notice and acknowledges that:

Bidders are required to comply with Affirmative Action / Equal Employment Opportunity law as set forth in N.J.S.A. 10:5-31 *et seq.* and N.J.A.C. 17:27.

In particular, Exhibit B, Mandatory Equal Employment Opportunity Language (Construction Contracts), attached hereto, shall be incorporated into the contract awarded by the UCIA for the construction of the Project.

Additionally, the bidder to whom the contract is awarded shall submit to the UCIA, prior to the signing of the contract, Form AA-201, Initial Project Workforce Report Construction.

Bidders are referred to the State of New Jersey website www.state.nj.us/treasury/contract_compliance for further information and forms regarding AA/EEO laws and regulations.

If the successful contractor does not submit the Initial Project Workforce Report Construction (AA-201) prior to signing of the contract, the UCIA will declare the contractor non-responsive and may award the contract to the next lowest responsible bidder.

NAME OF BIDDER

By: _____

Print Name: _____

Title: _____

Date: _____

(REVISED 4/10)

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

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, up - grading, 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. 17:27 -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:

(1) 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 non-discrimination 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 contractor 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 of 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 Division 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 **Subchapter 10 of the Administrative Code (NJAC 17:27)**.

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM
CONTRACT

STATE OF _____)
) SS:
COUNTY OF _____)

I, _____, of the municipality of _____
_____ in the State of _____, of full age, being
duly sworn according to law on my oath depose and say that:

I am _____ of the firm of _____
_____, the Bidder making the proposal for the above named Project ("Contractor"), and that I executed
said proposal with full authority to do so; and that said Contractor, pursuant to N.J.S.A. 40A:11-20,
certifies that it owns, leases or controls all the necessary equipment required by the Bid Documents and as
set forth on the Equipment Statement.

If the Bidder is not the actual owner or lessee of any such equipment, then the Bidder shall attach
to this Certificate information identifying the source from which the equipment will be obtained, and such
information shall be accompanied by a certificate from the owner or person in control of the equipment
definitively 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.

Sworn to and subscribed before me
this _____ day of _____, 20____.

Name of Affiant

Print Name of Affiant

A Notary Public of New Jersey
My Commission Expires:

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

EQUIPMENT STATEMENT

The undersigned hereby certifies that Bidder is fully prepared with the necessary capital, material, and machinery to conduct the Work as herein specified and further certifies that the equipment required for the proper execution of this contract in the time specified is available as follows:

LIST EQUIPMENT OWNED BY THE BIDDER:

(Attach additional sheets if necessary)

LIST EQUIPMENT TO BE LEASED BY THE BIDDER FOR THIS JOB:

(Attach additional sheets if necessary)

Include certifications from owner or person in control of equipment, including subcontractor, definitively granting the bidder control of the equipment as may be necessary for the completion of work.

Witness

NAME OF BIDDER

Date

ADDRESS

BY: _____

PRINT NAME

TITLE

YOU MAY ATTACH ADDITIONAL SHEETS, BUT YOU MUST SIGN AND WITNESS THIS SHEET

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

AMERICANS WITH DISABILITIES ACT **EQUAL OPPORTUNITY FOR INDIVIDUALS WITH DISABILITIES**

The Contractor and the Union County Utilities Authority (hereafter "Owner") do hereby agree that the provisions of Title II of the Americans With Disabilities Act of 1990 (the "Act") (42 U.S.C.S12.101 et seq.), which prohibits discrimination on the basis of disability by public entities in all services, programs and activities provided or made available by public entities, and the rules and regulations promulgated pursuant thereunto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the Owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the Owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the Owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the Owner's grievance procedure, the contractor agrees to abide by any decision of the Owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the Owner, or if the Owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The Owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim. If any action or administrative proceeding is brought against the Owner or any of its agents, servants, and employees, the Owner shall expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or process received by the Owner or its representatives.

It is expressly agreed and understood that any approval by the Owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the Owner pursuant to this paragraph.

It is further agreed and understood that the Owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations

200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

AMERICANS WITH DISABILITIES ACT (Continued)

may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, 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 this Agreement or otherwise at law.

Name of Bidder _____

By: _____
Signature

Print Name: _____

Title: _____

Date _____

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

1. _____
(Name of Bidder)
2. _____
(Permanent Main Office Address)
3. _____
(When Organized)
4. _____
(If a Corporation, Where Incorporated)
5. Number of years engaged in construction or contracting business under present firm or trade name?

6. Contracts on hand: (Show gross amount of each Contract and the appropriate dates of Completion)

7. General character of work performed by you. _____

8. Have you ever failed to complete any work awarded to you? _____

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name _____

STATEMENT OF BIDDER'S QUALIFICATIONS (Continued)

9. Have you ever defaulted on a Contract? _____ If so, complete details, including where and why?
- _____
- _____
10. List your major equipment available for this Contract. (Attach separate sheet, if necessary)
- _____
- _____
11. Experience in the Construction work similar in importance to this Project.
- _____
- _____
12. Have you had any material adverse changes from the trades as listed in NJ Notice of Classification within last five (5) years? _____. If so, list prior classification.
13. Background and experience of the principal members of your organization, including the officers.
- _____
- _____
14. Bank Reference. (Name, Address, Phone, Representative) _____
15. Will you, upon request, furnish any other information that may be required by the UCIA?
- _____
16. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the UCIA in verification of the recitals comprising this Statement of Bidder's Qualifications.

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name _____

STATEMENT OF BIDDER'S QUALIFICATIONS (Continued)

17. Bidder's telephone number, fax number and e-mail address.

Phone _____

Fax _____

E-mail _____

Mobile _____

NAME OF BIDDER

By: _____

Print Name: _____

Title: _____

Subscribed and sworn to before me
this _____ day of _____, 20____.

Notary Public of New Jersey
My Commission Expires:
_____, 20__.

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

CONTRACTOR PERFORMANCE RECORD

How many years has your organization been in business as a Contractor under your present business name? _____.

How many years experience in construction work has your organization had (a) as a general contractor? _____; (b) as a subcontractor? _____.

What is the construction experience of the principal individuals of your organization?

Individual's Name	Present Position or Office	Yrs. of Construction Experience	Magnitude & Type of Work	In What Capacity

Has bidder ever failed to complete any work contracted to you?

If so, where and why? (Attach separate sheet if necessary)

Has any officer or partner of your organization ever failed to complete a construction contract handled in its own name?

If so, state name of individual, name of owner, location and type of project, and reason for the failure to complete.

PERFORMANCE RECORD (Continued) List of all contracts completed by you within past 10 years.

Bidder's Name _____

Name of Owner	Name & Location of Project: Type Of Work	Prime or Sub- Cont.	Engineer or Architect in Charge for Owner	Contract Price (Omit Cost)	Date Completed	Was Time* Extension Necessary	Were Any Penalties Imposed	Were Liens* Claims or Stop Notice Filed

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations –
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name _____

CONTRACTOR PERFORMANCE RECORD (Continued)

Explanation of details in connection with non-completion of contracts, time extensions, penalties imposed, labor troubles experience, liens, claims and notices filed again contracts listed in preceding item "Performance Record:"

CERTIFICATION

The information above is true and complete to the best of my knowledge and belief.

(Name of Bidder)

By: _____
(Signature)

(Title)

Subscribed and sworn to before me
this _____ day of _____, 20____.

A Notary Public of New Jersey
My Commission Expires: _____, 20__.

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name _____

**AFFIDAVIT REGARDING LIST OF DEBARRED,
SUSPENDED OR DISQUALIFIED BIDDERS**

STATE OF NEW JERSEY _____)

) SS:

COUNTY OF _____)

I, _____, of the municipality of _____
in the State of _____, of full age, being duly sworn according
to law on my oath depose and say that:

I am _____ of the firm of _____,
the Bidder making the Proposal for the above named Project. I have executed the said Proposal with full
authority to do so. Said Bidder is not at the time of the making of this bid included on the New Jersey
State Treasurer's or the Federal Government's List of Debarred, Suspended or Disqualified Bidders as a
result of action taken by any State or Federal Agency.

Name of Bidder

By: _____
(Signature of Authorized Representative)

Subscribed and sworn to before me
this _____ day of _____, 20____.

Notary Public of New Jersey
My Commission Expires: _____, 20____.

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

CERTIFICATE OF INSURANCE STATEMENT

The Bidder fully understands the UCIA's insurance requirements as stated in the Bid Documents as well as the Owner/Contractor Agreement and agrees to provide all insurance required by these documents prior to the issuance of the Notice to Proceed.

NAME OF BIDDER _____

By: _____
(Signature)

Print Name : _____

Title: _____

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name _____

**ACKNOWLEDGEMENT OF PROJECT LABOR AGREEMENT
REQUIREMENTS (PLA)**

Bidder, _____, hereby acknowledges that the within Project, upon which the undersigned has submitted a Bid Proposal, requires the execution of a Project Labor Agreement (PLA) and the utilization of union employees. The undersigned, if awarded a contract, agrees to execute the PLA, substantially in the form attached hereto, and comply with all terms and conditions of same in the performance of the Work.

Attest:

NAME OF BIDDER: _____

By: _____

Print Name: _____

Title: _____

**PROJECT LABOR AGREEMENT
BY AND BETWEEN
AND
THE UNION COUNTY BUILDING AND
CONSTRUCTION TRADES COUNCIL, AFL-CIO**

THIS PROJECT LABOR AGREEMENT dated _____ 2022, by and between _____, located at _____ (the “Contractor”), and the **Union County Building and Construction Trades Council, AFL-CIO** (“BTC”), on behalf of itself and the various local Unions (the Contractor and the BTC are sometimes collectively referred to as the “Parties”):

W I T N E S S E T H:

WHEREAS, the Union County Improvement Authority (the “Authority”) has been duly created by ordinance of the Union County Board of County Commissioners as a public body corporate and politic of the State of New Jersey pursuant to and in accordance with the County Improvement Authorities Law, constituting Chapter 183 of the Pamphlet Laws of 1960 of the State, as amended and supplemented from time to time; and

WHEREAS, the Authority authorized bids for the construction pursuant to New Jersey Local Public Contracts Law, N.J.S.A. 40A:11-1 *et seq.* for the Project; and

WHEREAS, on _____, the Authority awarded the bid for the Project to the Contractor; and

WHEREAS, on behalf of itself, and reflecting the objectives of the Library, the Authority desires to provide for the efficient, safe, quality, and timely completion of the Project in a manner designed to afford lower reasonable costs to the Authority, the Library and the public; and

WHEREAS, this Project Labor Agreement (“PLA” or “Agreement”) will foster the achievement of these goals, by:

- (1) ensuring a reliable source of skilled and experienced labor;
- (2) standardizing the terms and conditions governing the employment of labor on the Project;
- (3) permitting wide flexibility in work scheduling and shift hours and times; from those which otherwise might obtain;
- (4) receiving negotiated adjustments as to work rules and staffing requirements from those which otherwise might obtain;

- (5) providing comprehensive and standardized mechanisms for the settlement of work disputes, including those relating to jurisdiction;
- (6) avoiding the costly delays of potential strikes, slowdowns, walkouts, picketing and other disruptions arising from work disputes, and promote labor harmony and peace for the duration of the Project.
- (7) furthering public policy objectives as to improved employment opportunities for minorities, women and the economically disadvantaged in the construction industry;
- (8) expediting the construction process; and,

WHEREAS, the BTC and its local affiliate Unions desire the stability, security and work opportunities afforded by a Project Labor Agreement; and

WHEREAS, the Parties desire to maximize Project safety conditions for both workers and the public;

NOW, THEREFORE, the Parties agree as follows:

ARTICLE 1 - PARTIES TO THE AGREEMENT

This is a Project Labor Agreement entered into by and between the Contractor and the Union County Building and Construction Trades Council, AFL-CIO, on behalf of itself and its affiliates and members, and the applicable local Unions for the performance of work in connection with the Project. The Authority is not a party to this PLA, but is the owner ("Owner") of the Project and is referenced herein in that regard.

ARTICLE 2 - GENERAL CONDITIONS

Section 1. Definitions

Throughout this PLA, the local Unions are referred to singularly and collectively as "the Union(s)." Where specific reference is made to "Local Unions" that phrase is sometimes used. The term "Contractor(s)" shall include the Contractor and all of the Contractor's subcontractors of whatever tier, engaged in on-site Project Work within the scope of this Agreement as defined in Article 3. The Union County Building and Construction Trades Council, AFL-CIO is referenced as the BTC, and the work covered by this Agreement (as defined in Article 3) is referred to as the "Project" or "Project Work."

Section 2. Conditions for Agreement to Become Effective

This PLA shall not become effective unless it is executed by the BTC and the Contractor. It will remain in effect until the completion of the Project.

Section 3. Entities Bound and Administration of Agreement

This Agreement shall be binding on the Contractor and all of the subcontractors performing on-site Project Work. The Contractor shall include in any subcontract for performance during the term of this Agreement, a requirement that their subcontractors, of whatever tier, become bound by this Agreement with respect to subcontracted work performed within the scope of Article 3. This Agreement shall be administered by the Authority.

Section 4. Supremacy Clause

This Agreement, together with the local Collective Bargaining Agreements appended hereto as Schedule A represents the complete understanding of all signatories and supersedes any national agreement, local agreement or other collective bargaining agreement of any type which would otherwise apply to this Project, in whole or in part, except for all work performed under the NTD Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, all instrument calibration work and loop checking shall be performed under the terms of the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, and the National Agreement of the International Union of Elevator Constructors, with the exception of Article VII, IX and X of this Project Agreement, which shall apply to such work. Where a subject covered by the provisions, explicit or implicit, of this Agreement is also covered by a Schedule, the provisions of this Agreement shall prevail. It is further understood that the Contractor shall not be required to sign any other agreement as a condition of performing work on this Project. No practice, understanding or agreement between the Contractor and Local Unions that is not explicitly set forth in this Agreement shall be binding on this Project unless endorsed in writing by the Authority.

Section 5. Liability

The liability of the Contractor and the liability of the BTC under this Agreement shall be several and not joint. The Authority and the Contractor shall not be liable for any violations of this Agreement by any other Contractor, and the BTC and the applicable Local Unions shall not be liable for any violations of this Agreement by any other union.

Section 6. Non-Liability of Authority

The Authority shall require in its bid specifications for all work within the scope of Article 3 that the successful bidder become a signatory to and bound by this Agreement, and their subcontractors of whatever tier become bound by this Agreement. The Authority is not a party to and shall not be liable in any manner under this Agreement. It is understood that nothing in this Agreement shall be construed as limiting the sole discretion of the Authority in determining which Contractors shall be awarded contracts for Project Work. It is further understood that the Authority has sole discretion at any time to terminate, delay or suspend the work, in whole or part, on this Project.

Section 7. Availability and Applicability to All Successful Bidders

BTC agrees that this Agreement will be made available to, and will fully apply to the successful bidder for the Project who becomes signatory thereto, without regard to whether that successful bidder performs work at other sites on either a union or non-union basis and without regard to whether employees of such successful bidder are, or are not, members of any unions. This Agreement shall not apply to the work of the Contractor performed at any location other than the Project site, as defined in Article 3, Section 1.

ARTICLE 3 - SCOPE OF THE AGREEMENT

The Project Work covered by this Agreement shall be as defined and limited by the following sections of this Article.

Section 1: The Work

The scope of work is confined to the on-site Project Work. This Agreement shall apply to the Project Work set forth and described in the Bid Documents, including the General Terms and Specifications and all attachments thereto. This scope of work may be amended from time to time.

Section 2. Excluded Employees

The following persons are not subject to the provisions of this Agreement, even though performing work on the Project:

Superintendents, supervisors (excluding superintendents and general supervisors and forepersons specifically covered by a craft's Schedule), engineers, inspectors and testers (excluding divers specifically covered by a craft's Schedule), quality control assurance personnel, timekeepers, mail carriers, clerks, office workers, messengers, guards, non-manual employees, and all professional, engineering, administrative and construction management persons;

Employees of the Authority, the CM/Architect, the County, the City or any State agency, authority or entity or employees of any municipality or county or other public employer;

Employees and entities engaged in off-site manufacture, modifications, repair, maintenance, assembly, painting, handling or fabrication of Project components, materials, equipment or machinery, unless such offsite operations are covered by the New Jersey Prevailing Wage Act by being dedicated exclusively to the performance of the public works contract or building Project and are adjacent to the site of work, or involved in deliveries to and from the Project site, excepting local deliveries of all major construction materials including fill, ready mix, asphalt and item 4 which are covered by this Agreement;

Employees of the Contractor, excepting those performing manual, on-site Project Work who will be covered by this Agreement;

Employees engaged in on-site equipment warranty;

Employees engaged in geophysical testing (whether land or water) other than boring for

core samples;

Employees engaged in laboratory or specialty testing or inspections;

Employees engaged in ancillary Project Work performed by third parties such as electric utilities, gas utilities, telephone utility companies, and railroads.

Section 3. Non-Application To Certain Entities

This Agreement shall not apply to the parents, affiliates, subsidiaries, or other joint or sole ventures of the Contractor that do not perform work at this Project. It is agreed, for the purposes of this Agreement only, that this Agreement does not have the effect of creating any joint employment, single employer or alter ego status among the Authority, and/or the Contractor. The Agreement shall further not apply to any state or county agency, authority, or other municipal or public entity and nothing contained herein shall be construed to prohibit or restrict the Authority or its employees of any other state authority, agency or entity and its employees from performing on or off-site work related to the Project. As the Project Work is completed and accepted, the Agreement shall not have further force or effect on such items or areas except where inspections, additions, repairs, modifications, check-out and/or warranty work are assigned in writing (copy to Local Union involved) by the Contractor for performance under the terms of this Agreement.

ARTICLE 4 - UNION RECOGNITION AND EMPLOYMENT

Section 1. Pre-Hire Recognition

The Contractor recognizes the applicable local Unions as the sole and exclusive bargaining representatives of all craft employees who are performing Project Work within the scope of this Agreement as defined in Article 3.

Section 2. Union Referral

- A. The Contractor agrees to hire craft employees covered by this Agreement through the job referral systems and hiring halls (where the referrals meet the qualifications set forth in items 1, 2, and 4 subparagraph B) established in the Local Unions' area collective bargaining agreements (attached as Schedules A and B to this Agreement).

Notwithstanding this, the Contractors shall have sole rights to determine the competency of all referrals; the number of employees required (except with regard to pile driving); the selection of employees to be laid-off (subject to the applicable procedures in Schedules A and B) for permanent and/or temporary layoffs and except as provided in Article 5, Section 3); and the sole right to reject any applicant referred by a Local Union, subject to the show-up payments required in the applicable Schedule. In the event that a Local Union is unable to fill any request for qualified employees within a 48-hour period after such requisition is made by the Contractor (Saturdays, Sundays, and holidays excepted), the Contractor may

employ qualified applicants from another competent source. In the event that the Local Union does not have a job referral system, the Contractor shall give the Local Union first preference to refer applicants, subject to the other provisions of this Article. The Contractor shall notify the Local Union of the craft employees hired within its jurisdiction from any source other than referral by the Union.

- B. Following the employment of the first employee in each craft under Schedule A or the procedure set forth above in paragraph A, the Contractor may request by name, and the Local will honor, referral of persons who have applied to the Local for Project Work and who meet the following qualifications as determined by a Committee comprised of the applicable Local Union, the BTC, and a mutually selected third party or, in the absence of agreement, the permanent arbitrator (or designee) designated in Article 7:
- (1) possess any license required by New Jersey law for Project Work to be performed;
 - (2) have worked a total of at least 1000 hours in the Construction craft during the prior 3 years;
 - (3) were on the Contractor's active payroll for at least 60 out of the 180 calendar days prior to the contract award;
 - (4) have demonstrated ability to safely perform the basic function of the applicable trade.

No more than 12 percent of the employees covered by this Agreement, per Contractor by craft, shall be hired through the special provisions above (any fraction shall be rounded to the next highest whole number).

- C. A certified MBE/WBE contractor may request from the Workforce Coordinator an exception to, and waiver of, the above per centum limitation upon the number of its employees to be hired through the special provision of Section 2.B above. This exception is based upon hardship and demonstration by the contractor that the Project Work would be the contractor's only job and that it would be obliged to lay off qualified minority and female employees in its current workforce moving from the last job.

The exception and waiver are also conditioned upon the employees meeting the qualifications as set forth in Section 2.B above.

Section 3. Non-Discrimination in Referrals

The BTC, on behalf of its affiliates and local Unions, represents that the various hiring halls and referral systems will be operated in a non-discriminatory manner and in full compliance with all applicable federal, state and local laws and regulations, which require equal employment opportunities. Referrals shall not be affected in any way by the rules, regulations, bylaws, constitutional provisions or any other aspects or obligations of union membership, policies or

requirements and shall be subject to such other conditions as are established in this Article. No employment applicant shall be discriminated against by any referral system or hiring hall because of the applicant's union membership, or lack thereof.

Section 4. Minority And Female Referrals

In the event a Union either fails, or is unable, to refer qualified minority or female applicants in percentages equaling Project affirmative action goals as set forth in the bid specifications, the Contractor may employ qualified minority or female applicants from any other available source as Apprentice Equivalents. Apprentice Equivalents will have completed a DOL approved training program, applied to take a construction Apprenticeship test, and will be paid at not less than the applicable equivalent Apprentice rate. With the approval of the Local Administrative Committee (LAC), experience in construction related areas may be accepted as meeting the above requirements.

Section 5. Cross And Qualified Referrals

The Unions shall not knowingly refer to the Contractor an employee then employed by another Contractor working under this Agreement. The Local Unions will exert their utmost efforts to recruit sufficient numbers of skilled and qualified craft employees to fulfill the requirements of the Contractor.

Section 6. Union Dues/Working Assessments

All employees covered by this Agreement shall be subject to the union security provisions contained in the applicable Schedule local agreements, as amended from time to time, but only for the period of time during which they are performing on-site Project Work and only to the extent of rendering payment of the applicable union dues and assessments uniformly required for union membership in the Local Union, which represents the craft in which the employee is performing Project work. No employee shall be discriminated against at the Project site because of the employee's union membership or lack thereof. In the case of unaffiliated employees, the dues payment can be received by the Unions as a working assessment fee.

Section 7. Craft Forepersons and General Forepersons

The selection of craft forepersons and/or general forepersons and the number of forepersons required shall be solely the responsibility of the Contractor except where otherwise provided by specific provisions of an applicable Schedule. All forepersons shall take orders exclusively from the designated Contractor representatives. Craft forepersons shall be designated as working forepersons at the request of the Contractor, except when an existing local Collective Bargaining Agreement prohibits a foreperson from working when the craftspersons he is leading exceed a specified number.

ARTICLE 5 - UNION REPRESENTATION

Section 1. Local Union Representative

Each Local Union representing on-site Project employees shall be entitled to designate, in writing (copy to Contractor), one representative, and the Business Manager, who shall be afforded access to the Project.

Section 2. Stewards

- A. Each Local Union shall have the right to designate a working journey person as a Steward and an alternate, and shall notify the Contractor of the identity of the designated Steward (and alternate) prior to the assumption of such duties. Stewards shall not exercise supervisory functions and will receive the regular rate of pay for their craft classifications. There will be no non-working Stewards on the Project.
- B. In addition to their work as an employee, the Steward shall have the right to receive complaints or grievances and to discuss and assist in their adjustment with the Contractor's appropriate supervisor. Each Steward shall be concerned with the employees of the Steward's Contractor and, if applicable, subcontractors of that Contractor, but not with the employees of any other Contractor. The Contractor will not discriminate against the Steward in the proper performance of Union duties.
- C. The Stewards shall not have the right to determine when overtime shall be worked, or who shall work overtime, except pursuant to a Schedule provision providing procedures for the equitable distribution of overtime.

Section 3. Layoff of a Steward

Contractors agree to notify the appropriate Union, 24 hours prior to the layoff of a Steward, except in cases of discipline or discharge for just cause. If a Steward is protected against layoff by a Schedule, such provisions shall be recognized to the extent the Steward possesses the necessary qualifications to perform the work required. In any case in which a Steward is discharged or disciplined for just cause, the Local Union involved shall be notified immediately by the Contractor.

ARTICLE 6 - MANAGERMENTS RIGHTS

Section 1. Reservation of Rights

Except as expressly limited by a specific provision of this Agreement, the Contractor retains full and exclusive authority for the management of the Project operations including, but not limited to: the right to direct the work force, including determination as to the number to be hired and the qualifications therefore; the promotion, transfer, layoff of its employees; or the discipline or discharge for just cause of its employees; the assignment and schedule of work; the

promulgation of reasonable Project work rules; and, the requirement, timing and number of employees to be utilized for overtime work. No rules, customs, or practices, which limit or restrict productivity or efficiency of the individual, as determined by the Contractor and/or joint working efforts with other employees shall be permitted or observed.

Section 2. Materials, Methods & Equipment

There shall be no limitations or restriction upon the contractors' choice of materials, techniques, methods, technology or design, or, regardless of source or location, upon the use and installation of equipment, machinery, package units, pre-cast, pre-fabricated, pre-finished, or pre-assembled materials, tool, or other labor-saving devices. Contractors may, without restriction, install or use materials, supplies or equipment regardless of their source. The on-site installation or application of such items shall be performed by the craft having jurisdiction over such work; provided, however, it is recognized that other personnel having special qualifications may participate, in a supervisory capacity, in the installation, check-out or testing of specialized or unusual equipment or facilities as designated by the Contractor. Notwithstanding the foregoing statement of contractor rights, prefabrication issues relating to work traditionally performed at the job site shall be governed pursuant to the terms of the applicable Schedule. There shall be no restrictions as to work, which is performed off-site for the Project, except for 1) offsite operations work covered under the New Jersey Prevailing Wage Act or 2) done in a fabrication center, tool yard, or batch plant dedicated exclusively to the performance of work on the Project, and located adjacent to the "site of work."

ARTICLE 7 - WORK STOPPAGES AND LOCKOUTS

Section 1. No Strikes-No Lockout

There shall not be strikes, sympathy strikes, picketing, work stoppages, slowdowns, hand billing, demonstrations or other disruptive activity at the Project for any reason by any Union or employee against the Contractor or employer while performing work at the Project. There shall be no other Union, or concerted or employee activity which disrupts or interferes with the operation of the existing free flow of traffic in the Project area. Failure of any Union or employee to cross any picket line established by any union, signatory or non-signatory to this Agreement, or the picket or demonstration line of any other organization, at or in proximity to the Project site is a violation of this Article. There shall be no lockout at the Project by the Contractor. The Contractor and Unions shall take all steps necessary to ensure compliance with this Section 1 and to ensure uninterrupted construction and the free flow of traffic in the Project area for the duration of this Agreement.

Section 2. Discharge for Violation

The Contractor may discharge any employee for violating Section 1 above, and any such employee will not be eligible thereafter for referral under this Agreement for a period of 100 days.

Section 3. Notification

If the Contractor contends that any Union has violated this Article, it will notify the appropriate district or area council of the Local Union involved advising of such fact, with copies of the notification to the Local Union and the BTC. The district or area council, and the BTC shall each instruct, order and otherwise use their best efforts to cause the employees, and/or the Local Unions to immediately cease and desist from any violation of this Article. A district or area council, or the BTC complying with these obligations shall not be liable for the unauthorized acts of a Local Union or its members.

Section 4. Expedited Arbitration

The Contractor or Union alleging a violation of Section 1 of this Article may utilize the expedited procedure set forth below (in lieu of, or in addition to, any actions at law or equity) that may be brought.

- A. A party invoking this procedure shall notify J.J. Pierson Jr, Esq., at 51 JFK Parkway, First Floor West, Short Hills, New Jersey 07078, telephone number (973) 359-8100, fax number (973) 359-8161 ,who shall serve as Arbitrator under this expedited arbitration procedure. In the event that J.J. Pierson is unable to serve, a party invoking this procedure shall notify Gary Kendellen, who shall serve as arbitrator under this expedited procedure. Copies of such notification will be simultaneously sent to the alleged violator and, if a Local Union is alleged to be in violation, it's International, the Owner, the GC, and the BTC.
- B. The Arbitrator shall thereupon, after notice as to time and place to the Contractor, the Local Union involved, the BTC, and the Authority, hold a hearing within 48 hours of receipt of the notice invoking the procedure it is contended that the violation still exists. The hearing will not, however, be scheduled for less than 24 hours after the notice to the district or area council required by Section 3 above.
- C. All notices pursuant to this Article may be by telephone, telegraph, hand delivery, or fax, confirmed by overnight delivery, to the arbitrator, Contractor or Local Union involved. The hearing may be held on any day including Saturdays or Sundays. The hearing shall be completed in one session, which shall not exceed 8 hours duration (no more than 4 hours being allowed to either side to present their case, and conduct their cross examination) unless otherwise agreed. A failure of any Union or Contractor to attend the hearing shall not delay the hearing of evidence by those present or the issuance of an award by the Arbitrator.
- D. The sole issue at the hearing shall be whether a violation of Section 1, above, occurred. If a violation is found to have occurred, the Arbitrator shall issue a Cease and Desist Award restraining such violation and serve copies on the Contractor and Union involved. The Arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages, which issue is reserved solely for court proceedings, if any. The Award shall be issued in writing within 3 hours after the close of the hearing, and may be issued without an Opinion. If any involved party desires an Opinion, one shall be issued

within 15 calendar days, but its issuance shall not delay compliance with, or enforcement of, the Award.

- E. An Award issued under this procedure may be enforced by any court of competent jurisdiction upon the filing of the Agreement together with the Award. Notice of the filing of such enforcement proceedings shall be given to the Union or Contractor involved. In any court proceeding to obtain a temporary or preliminary order enforcing the arbitrator's Award as issued under this expedited procedure, the involved Union and Contractor waive their right to a hearing and agree that such proceedings may be ex parte, provided notice is given to opposing counsel. Such agreement does not waive any party's right to participate in a hearing for a final court order of enforcement or in any contempt proceeding.
- F. Any rights created by statute or law governing arbitration proceedings which are inconsistent with the procedure set forth in this Article, or which interfere with compliance thereto, are hereby waived by the Contractor and the Local Unions to whom they accrue.
- G. The fees and expenses of the Arbitrator shall be equally divided between the Contractor and Local Union.

Section 5. Arbitration of Discharges for Violation

Procedures contained in Article 9 shall not be applicable to any alleged violation of this Article, with the single exception that an employee discharged for violation of Section 1, *supra*, may have recourse to the procedures of Article 9 to determine if the employee did, in fact, violate the provisions of Section 1 of this Article; but not for the purpose of modifying the discipline imposed where a violation is found to have occurred.

ARTICLE 8. - LOCAL ADMINISTRATIVE COMMITTEE (LAC)

Section 1. The Local Administrative Committee

The local administrative committee will meet on a regular basis to:

- (1) Implement and oversee the Agreement procedures and initiatives;
- (2) Monitor the effectiveness of the Agreement; and
- (3) Identify opportunities to improve efficiency and work execution.

Section 2. Composition

The LAC will be co-chaired by the President of the BTC or his designee, and a designated official of the Authority. It will be comprised of representatives of the applicable Local Unions to this Project and representatives of the Contractor.

ARTICLE 9 - GRIEVANCE & ARBITRATION PROCEDURE

Section 1. Procedure for Resolution of Grievances

Any question, dispute or claim arising out of, or involving the interpretation or application of this Agreement (other than jurisdictional disputes or alleged violations of Article 7, Section 1) shall be considered a grievance and shall be resolved pursuant to the exclusive procedure of the steps described below; provided, in all cases, that the question, dispute or claim arose during the term of this Agreement.

Step 1:

(a) When any employee covered by this Agreement feels aggrieved by a claimed violation of this Agreement, the employee shall, through the Local Union business representative or job steward give notice of the claimed violation to the work site representative of the Contractor. To be timely, such notice of the grievance must be given within 7 calendar days after the act, occurrence, or event giving rise to the grievance, or after the act, occurrence or event became known or should have become known to the Union. The business representative of the Local Union or the job steward and the work site representative of the Contractor shall meet and endeavor to adjust the matter within 7 calendar days after timely notice has been given. If they fail to resolve the matter within the prescribed period, the grieving party, may, within 7 calendar days thereafter, pursue Step 2 of the grievance procedure by serving the Contractor and the Authority with written copies of the grievance setting forth a description of the claimed violation, the date on which the grievance occurred, the provisions of the Agreement alleged to have been violated. Grievances and disputes settled at Step 1 are non-precedential except as to the specific Local Union, employee and Contractor directly involved, unless the settlement is accepted in writing, by the Local Union, as creating a precedent.

(b) Should any party or party affiliate to this Agreement have a dispute (excepting jurisdictional disputes or alleged violations of Article 7, Section 1) with any other party or party affiliate to this Agreement and, if after conferring, a settlement is not reached within 7 calendar days, the dispute shall be reduced to writing and proceed to Step 2 in the same manner as outlined in subparagraph (a) for the adjustment of employee grievances.

Step 2:

The Business Manager or designee of the Local Union, together with representatives of the BTC, the Contractor, and the Authority shall meet in Step 2 within 5 calendar days of the written grievance to arrive at a satisfactory settlement.

Step 3:

(a) If the grievance shall have been submitted but not resolved in Step 2, any of the participating Step 2 entities may, within 14 calendar days after the initial Step

2 meeting, submit the grievance in writing (copies to other participants) to the next available arbitrator of the panel of arbitrators consisting of J.J. Pierson Jr., Esq., Gary Kendellen and Wellington Davis, who shall serve as arbitrator under this expedited procedure. The Labor Arbitration Rules of the American Arbitration Association shall govern the conduct of the arbitration hearing, at which all Step 2 participants shall be parties.

(b) Failure of the grieving party to adhere to the time limits set forth in this Article shall render the grievance null and void. These time limits may be extended only by written consent of the Contractor and the Local Union at the particular step where the extension is agreed upon. The Arbitrator shall have authority to make decisions only on the issues presented to him and shall not have the authority to change, add to, delete or modify any provision of this Agreement.

Section 2. Limitation as to Retroactivity

No arbitration decision or award may provide retroactivity of any kind exceeding 30 calendar days prior to the date of service of the written grievance on the Contractor or Local Union.

Section 3. Participation by General Contractor

The Authority shall be notified by the Contractor of all actions at Steps 2 and 3 and, at its election, may participate in full in all proceedings at these Steps, including Step 3 arbitration.

ARTICLE 10 - JURISDICTIONAL DISPUTES

Section 1. No Disruptions

There will be no strikes, sympathy strikes, work stoppages, slowdowns, picketing or other disruptive activity of any kind arising out of any jurisdictional dispute. Pending the resolution of the dispute, the work shall continue uninterrupted and as assigned by the Contractor. No jurisdictional dispute shall excuse a violation of Article 7.

Section 2. Assignment

- A. There shall be a mandatory pre-job markup/assignment meeting prior to the commencement of any work. Attending such meeting shall be designated representatives of the applicable Local Union and the Contractor. Best efforts will be made to schedule the pre-job meeting in a timely manner before Notice to Proceed is issued but not later than 7 days prior to the start of the Project.
- B. Project construction work assignments shall be made by the Contractor according criteria set forth in Section 3, Subsection D 1-3.
- C. When a Contractor has made an assignment of work, he shall continue the

assignment without alteration unless otherwise directed by an arbitrator or there is agreement between the National and International Unions involved. Claims of a change of original assignment shall be processed in accordance with Article I of the Procedural Rules of the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry ("the Plan").

- D. In the event that a Union involved in the change of original assignment dispute is an affiliate of a National or International Union that is not affiliated with the Building and Construction Trades Department and does not wish to process a case through the Plan, the parties shall mutually select one of the following Arbitrators: Arbitrator J.J. Pierson, Arbitrator Paul Greenberg or Arbitrator John McMahon and submit the dispute directly to the Arbitrator. The selected Arbitrator shall determine whether the case requires a hearing or may be decided upon written submissions. In rendering his determination on whether there has been a change of original assignment, the Arbitrator shall be governed by the following:
1. The contractor who has the responsibility for the performance and installation shall make a specific assignment of the work which is included in his contract to a particular union(s). For instance, if contractor A subcontracts certain work to contractor B, then contractor B shall have the responsibility for making the specific assignments for the work included in his contract. If contractor B, in turn, shall subcontract certain work to contractor C, then contractor C shall have the responsibility for making the specific assignment for the work included in his contract. After work has been so assigned, such assignment will be maintained even though the assigning contractor is replaced and such work is subcontracted to another contractor. It is a violation of the Agreement for the contractor to hold up disputed work or shut down a project because of a jurisdictional dispute.
 2. When a contractor has made an assignment of work, he shall continue the assignment without alteration unless otherwise directed by an arbitrator or there is agreement between the National or International Unions involved.
 - a. Unloading and/or handling of materials to stockpile or storage by a trade for the convenience of the responsible contractor when his employees are not on the job site, or in an emergency situation, shall not be considered to be an original assignment to that trade.
 - b. Starting of work by a trade without a specific assignment by an authorized representative of the responsible contractor shall not be considered an original assignment to that trade, provided that the responsible contractor, or his authorized representative, promptly, and, in any event, within eight working hours following the start of work, takes positive steps to stop further unauthorized performance of the work by that trade.

Section 3. Procedure for Settlement of Disputes

- A. Any Union having a jurisdictional dispute with respect to Project work assigned to another Union will submit through its International the dispute in writing to the Administrator of the Plan within 72 hours and send a copy of the letter to the other Union involved, the Contractor involved, the General Contractor, the BTC, and the district or area councils of the unions involved. Upon receipt of a dispute letter from any Union, the Administrator will invoke the procedures set forth in the Plan to resolve the jurisdictional dispute. The jurisdictional dispute letter shall contain the information described in Article IV of the Procedural Rules of the Plan.
- B. Within 5 calendar days of receipt of the dispute letter, there shall be a meeting of the General Contractor, the Contractor involved, the Local Unions involved and designees of the BTC and the district or area councils of the Local Unions involved for the purpose of resolving the jurisdictional dispute.
- C. In order to expedite the resolution of jurisdictional disputes, the parties have agreed in advance to mutually select one of the following designated Arbitrators: Arbitrator J.J.Pierson, Arbitrator Paul Greenberg or Arbitrator John McMahon to hear all unresolved jurisdictional disputes arising under this Agreement. All other rules and procedures of the Plan shall be followed. If none of the three Arbitrators is available to hear the dispute within the time limits of the Plan, the Plan's arbitrator selection process shall be utilized to select another arbitrator.
- D. In the event that a Union involved in the dispute is an affiliate of a National or International Union that is not affiliated with the Building and Construction Trades Department and does not wish to process a case through the Plan as described in paragraphs A-C above, the parties to the dispute shall mutually select one of the following Arbitrators: Arbitrator J. J. Pierson, Arbitrator Paul Greenberg or Arbitrator John McMahon to hear the dispute and shall submit the dispute directly to the selected arbitrator. The time limits for submission and processing disputes shall be the same as provided elsewhere in this Section. The selected Arbitrator shall schedule the hearing within seven business days from the date of submission. If he cannot hear the case within the required timeframe, one of the other Arbitrators will be selected to hear the case unless all parties to the dispute agree to waive the seven day time limit. In rendering his decision, the Arbitrator shall determine:
 - 1. First whether a previous agreement of record or applicable agreement, including a disclaimer agreement, between the National and International Unions to the dispute governs;
 - 2. Only if the Arbitrator finds that the dispute is not covered by an

appropriate or applicable agreement of record or agreement between the crafts to the dispute, he shall then consider the established trade practice in the industry and prevailing practice in the locality. Where there is a previous decision of record governing the case, the Arbitrator shall give equal weight to such decision of record, unless the prevailing practice in the locality in the past ten years favors one craft. In that case, the Arbitrator shall base his decision on the prevailing practice in the locality. Except, that if the Arbitrator finds that a craft has improperly obtained the prevailing practice in the locality through raiding, the undercutting of wages or by the use of vertical agreements, the Arbitrator shall rely on the decision of record and established trade practice in the industry rather than the prevailing practice in the locality.

3. Only if none of the above criteria is found to exist, the Arbitrator shall then consider that because efficiency, cost or continuity and good management are essential to the well being of the industry, the interests of the consumer or the past practices of the employer shall not be ignored.

The Arbitrator shall set forth the basis for his decision and shall explain his findings regarding the applicability of the above criteria. If lower-ranked criteria are relied upon, the Arbitrator shall explain why the higher-ranked criteria were not deemed applicable. The Arbitrator's decision shall only apply to the job in dispute.

Each party to the arbitration shall bear its own expense for the arbitration and agrees that the fees and expenses of the Arbitrator shall be borne by the losing party or parties as determined by the Arbitrator.

- E. The Arbitrator shall render a short-form decision within 5 days of the hearing based upon the evidence submitted at the hearing, with a written decision to follow within 30 days of the close of hearing.
- F. This Jurisdictional Dispute Resolution Procedure will only apply to work performed by Local Unions that represent workers employed on the Project.
- G. Any Local Union involved in a jurisdictional dispute on this Project shall continue working in accordance with Section 2 above and without disruption of any kind.

Section 4. Award

Any award rendered pursuant to this Article and the Plan shall be final and binding on the disputing Local Unions and the involved Constructor on this Project only and may be enforced in accordance with the provisions of Article VII of the Plan. Any award rendered pursuant to the alternate procedures of this Article shall be final and binding on the disputing Local Unions and the involved Contractor on this Project only, and may be enforced in any court of competent

jurisdiction. Such award or resolution shall not establish a precedent on any other construction work not covered by this Agreement. In all disputes under this Article, the General Contractor and the involved Contractors shall be considered parties in interest.

Section 5. Limitations

The Jurisdictional Dispute Arbitrator shall have no authority to assign work to a double crew, that is, to more employees than the minimum required by the Contractor to perform the work involved; nor to assign work to employees who are not qualified to perform the work involved; not to assign work being performed by non-union employees to union employees. This does not prohibit the establishment, with the agreement of the Contractor, of composite crews where more than one employee is needed for the job. The aforesaid determinations shall decide only to whom the disputed work belongs.

Section 6. No Interference with Work

There shall be no interference or interruption of any kind with the Project Work while any jurisdictional dispute is being resolved. The Project Work shall proceed as assigned by the Contractor until finally resolved under the applicable procedure of this Article. The award shall be confirmed in writing to the involved parties. There shall be no strike, work stoppage or interruption in protest of any such award.

ARTICLE 11 - WAGES AND BENEFITS

Section 1. Classification and Base Hourly Rate

All employees covered by this Agreement shall be classified in accordance with the work performed and paid the base hourly wage rates for those classifications as specified in the attached Schedules, as amended during this Agreement. Recognizing, however, that special conditions may exist or occur on the Project, the Parties, by mutual agreement may establish rates and/or hours for one or more classifications, which may differ from Schedules. Parties to such agreements shall be the Contractor, the Local Unions, and the BTC.

Section 2. Employee Benefit Funds

- A. The Contractor agrees to pay contributions on behalf of all employees covered by this Agreement to the established employee benefit funds in the amounts designated in the appropriate Schedule; provided, however, that the Contractor and the BTC agree that only such bona fide employee benefits as are explicitly required under N.J.S.A 34:11-56.30 of the New Jersey State Labor Law shall be included in this requirement and paid by the Contractor on this Project. Bona fide jointly trusted fringe benefit plans established or negotiated through collective bargaining during the life of this Agreement may be added if similarly protected under N.J.S.A. 34:11-56-30. The Contractor shall not be required to contribute to non-N.J.S.A 34:11-56.30 benefits, trusts or plans.

- B. The Contractor agrees to be bound by the written terms of the legally established Trust Agreements specifying the detailed basis on which payments are to be paid into, and benefits paid out of, such Trust Funds but only with regard to work done on this Project and only for those employees to whom this Agreement requires such benefit Payments.
- C. Should the Contractor or sub-contractor become delinquent in the payment of contributions to the fringe benefit funds, then the subcontractor at the next higher tier, or upon notice of the delinquency claim from the Union or the Funds, agrees to withhold from the subcontractor such disputed amount from the next advance, or installment payment for work performed until the dispute has been resolved.

ARTICLE 12 - HOURS OF WORK, PREMIUM PAYMENTS, SHIFTS AND HOLIDAYS

Section 1. Work Week and Work Day

- A. The standard work week shall consist of 40 hours of work at straight time rates per one of the following schedules:
 - (1) Five-Day Work Week: Monday-Friday, 5 days, 8 hours plus 1/2 hour unpaid lunch period each day.
 - (2) Four-Day Work Week: Monday-Thursday; 4 days, 10 hours plus 1/2 hour unpaid lunch period each day.
- B. The Day Shift shall commence between the hours of 6:00 a.m. and 9:00 a.m. and shall end between the hours of 2:30 p.m. and 7:30 p.m. Starting and quitting times shall occur at the employees' place of work as may be designated by the Contractor.
- C. Scheduling - The Contractor shall have the option of scheduling either a five-day work week, or four-day work week (when mutually agreed upon on a craft-by-craft basis). The Contractor shall also have the option to set the workday hours consistent with Project requirements, the Project schedule, and minimization of interference with City operations traffic flow. When conditions beyond the control of the Contractor, such as severe weather, power failure, fire or natural disaster, prevent the performance of Project work on a regularly scheduled work day, the Contractor may, with mutual agreement of the Local Union on a craft-by-craft basis, schedule Friday (where on 4, 10's) during the calendar week in which a workday was lost, pursuant to Schedule A; providing the employees involved work a total of 40 hours or less during that work week.
- D. Notice – The Contractor shall provide not less than 5 days prior notice to the Local Union involved as to the work week and work hours schedules to be worked or such lesser notice as may be mutually agreed upon.

Section 2. Overtime

Overtime pay for hours outside of the standard work week and work day, described in paragraph A above, shall be paid in accordance with the applicable Schedule. There will be no restriction upon the Contractor's scheduling of overtime or the non-discriminatory designation of employees who shall be worked, except as noted in Article 5, Section 2. There shall be no pyramiding of overtime pay under any circumstances. The Contractor shall have the right to schedule work so as to minimize overtime.

Section 3. Shifts

- A. Flexible Schedules - Scheduling of shift work shall remain flexible in order to meet Project schedules and existing Project conditions including the minimization of interference with City operations. It is not necessary to work a day shift in order to schedule a second shift. Shifts must be worked a minimum of five consecutive work days, must have prior approval of the CM and must be scheduled with not less than five work days notice to the Local Union.
- B. Second/Shift - The second shift (starting between 2 p.m. and 8 p.m.) shall consist of 8 hours work (or 10 hours of work) for an equal number of hours pay at the straight time rate plus 15% in lieu of overtime and exclusive of a 1/2 hour unpaid lunch period.
- C. Flexible Starting Times - Shift starting times will be adjusted by the Contractor as necessary to fulfill Project requirements subject to the notice requirements of paragraph A.
- D. Four Tens - When working a four-day work week, the standard work day shall consist of 10 hours work for 10 hours of pay pursuant to Schedule A exclusive of an unpaid 1/2 hour meal period and regardless of the starting time. This provision is applicable to night shifts only, and such night shifts are subject to the shift differential in paragraph B above.
- E. It is agreed that when Project circumstances require a deviation from the above shifts, the involved unions, Contractor and the CM shall adjust the starting times of the above shifts or establish shifts which meet the Project requirements. It is agreed that neither party will unreasonably withhold their agreement.

Section 4. Holidays

- A. Schedule - There shall be 8 recognized holidays on the Project:

New Years Day	Labor Day
Presidents Day	Veterans Day
Memorial Day	Thanksgiving Day
Fourth of July	Christmas Day

*Work shall be scheduled on Good Friday pursuant to the craft's Collective Bargaining Agreement.

All said holidays shall be observed on the dates designated by New Jersey law. In the absence of such designations, they shall be observed on the calendar date except those holidays which occur on Sunday shall be observed on the following Monday. Holidays falling on Saturday are to be observed on the preceding Friday.

- B. Payment - Regular holiday pay, if any, and/or premium pay for work performed on such a recognized holiday shall be in accordance with the applicable Schedule.
- C. Exclusivity - No holidays other than those listed in Section 4-A above shall be recognized nor observed except in Presidential Election years when Election Day is a recognized holiday.

Section 5. Reporting Pay

- A. Employees who report to the work location pursuant to regular schedule and who are not provided with work or whose work is terminated early by the Contractor, for whatever reason, shall receive minimum reporting pay in accordance with the applicable Schedule.
- B. When an employee, who has completed their scheduled shift and left the Project site, is "called back" to perform special work of a casual, incidental or irregular nature, the employee shall receive pay for actual hours worked with a minimum guarantee, as may be required by the applicable Schedule.
- C. When an employee leaves the job or work location of their own volition or is discharged for cause or is not working as a result of the Contractor's invocation of Section 7 below, they shall be paid only for the actual time worked.
- D. Except as specifically set forth in this Article there shall be no premiums, bonuses, hazardous duty, high time or other special payments of any kind.
- E. There shall be no pay for time not actually worked except as specifically set forth in this Agreement and except where an applicable Schedule requires a full weeks pay for forepersons.

Section 6. Payment of Wages

- A. Payday - Payment shall be made by check, drawn on a New Jersey bank with branches located within commuting distance of the job site. Paychecks shall be issued by the Contractor at the job site by 10 a.m. on Thursdays. In the event that the following Friday is a bank holiday, paychecks shall be issued on Wednesday of that week. Not more than 3 days wages shall be held back in any pay period. Paycheck stubs shall contain the name and business address of the Contractor,

together with an itemization of deductions from gross wages.

- B. Termination-Employees who are laid-off or discharged for cause shall be paid in full for that which is due them at the time of termination. The Contractor shall also provide the employee with a written statement setting forth the date of lay off or discharge.

Section 7. Emergency Work Suspension

The Contractor or CM may, if considered necessary for the protection of life and /or safety of employees or others, suspend all or a portion of Project Work. In such instances, employees will be paid for actual time worked; provided, however, that when the Contractor requests that employees remain at the job site available for work, employees will be paid for “stand-by” time at their hourly rate of pay.

Section 8. Injury/Disability

The employee who, after commencing work, suffers a work-related injury or disability while performing work duties, shall receive no less than 8 hours wages for that day. Further, the employee shall be rehired at such time as able to return to duties provided there is still work available on the Project for which the employee is qualified and able to perform.

Section 9. Time Keeping

The Contractor may utilize brassing or other systems to check employees in and out. Each employee must check in and out. The Contractor will provide adequate facilities for checking in and out in an expeditious manner.

Section 10. Meal Period

The Contractor shall schedule an unpaid period of not more than 1/2 hour duration at the work location between the 3rd and 5th hour of the scheduled shift. The Contractor may, for efficiency of operation, establish a schedule which coordinates the meal periods of two or more crafts. If an employee is required to work through the meal period, the employee shall be compensated in a manner established in the applicable Schedule.

Section 11. Break Periods

There will be no rest periods, organized coffee breaks or other non-working time established during working hours. Individual coffee containers will be permitted at the employee's work location. Local area practice will prevail for coffee breaks that are not organized.

ARTICLE 13 – APPRENTICES

Section 1. Ratios

Recognizing the need to maintain continuing supportive programs designed to develop

adequate numbers of competent workers in the construction industry and to provide craft entry opportunities for minorities, women and economically disadvantaged non-minority males, the Contractor will employ apprentices in their respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured. The Contractor may utilize apprentices and such other appropriate classifications as are contained in the applicable Schedule in a ratio not to exceed 25% of the work force by craft (without regard to whether a lesser ratio is set forth in the applicable Schedule), unless the applicable Schedule provides for a higher percentage. Apprentices and such other classifications as are appropriate shall be employed in a manner consistent with the provisions of the appropriate Schedule.

Section 2. Department of Labor

To assist the Contractor in attaining a maximum effort on this Project, the Unions agree to work in close cooperation with, and accept monitoring by, the New Jersey State and Federal Departments of Labor to ensure that minorities, women, or economically disadvantaged are afforded opportunities to participate in apprenticeship programs which result in the placement of apprentices on this Project. To further ensure that this Contractor effort is attained, up to 50% of the apprentices placed on this Project should be first year, minority, women or economically disadvantaged apprentices. The Local Unions will cooperate with Contractor request for minority, women or economically disadvantaged referrals to meet this Contractor effort.

Section 3. Helmets to Hardhats

Contractor and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractor and Unions agree to utilize the services of the Center for Military recruitment, Assessment and Veterans Employment (hereinafter "Center") and the Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the parties.

The Unions and Contractor agree to coordinate with the Center to create and maintain an integrated database of veterans interested in working on the Project and of apprenticeship and employment opportunities for the Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

ARTICLE 14 - SAFETY PROTECTION OF PERSON AND PROPERTY

Section 1. Safety Requirements

The Contractor will ensure that applicable OSHA requirements and other requirements set forth in the contract documents are at all times maintained on the Project and the employees and Unions agree to cooperate fully with these efforts. Employees must perform their work at all times in a safe manner and protect themselves and the property of the Contractor and the Authority from injury or harm. Failure to do so will be grounds for discipline, including discharge.

Section 2. Contractor Rules

Employees covered by this Agreement shall at all times be bound by the reasonable safety, security, and visitor rules as established by the Contractor and the CM. Such rules will be published and posted in conspicuous places throughout the Project.

Section 3. Inspections

The Contractor and CM retain the right to inspect incoming shipments of equipment, apparatus, machinery and construction materials of every kind.

ARTICLE 15 - NO DISCRIMINATION

Section 1. Cooperative Efforts

The Contractor and Unions agree that they will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or age in any manner prohibited by law or regulation. It is recognized that special procedures maybe established by Contractor and Local Unions and the New Jersey State Department of Labor for the training and employment of persons who have not previously qualified to be employed on construction projects of the type covered by this Agreement. The Parties to this Agreement will assist in such programs and agree to use their best efforts to ensure that the goals for female and minority employment are met on this Project.

Section 2. Language of Agreement

The use of the masculine or feminine gender in this Agreement shall be construed as including both genders.

ARTICLE 16 - GENERAL TERMS

Section 1. Project Rules

The CM and the Contractor shall establish such reasonable Project rules as are appropriate for the good order of the Project, provided they do not violate the terms of this agreement. These rules will be explained at the pre-job conference and posted at the Project site and may be amended thereafter as necessary. Failure of an employee to observe these rules and regulations shall be grounds for discipline, including discharge. The fact that no order was posted prohibiting a certain type of misconduct shall not be a defense to an employee disciplined or discharged for such misconduct when the action taken is for cause.

Section 2. Tools of the Trades

The welding/cutting torch and chain fall, are tools of the trade that has jurisdiction over the work performed. Employees using these tools shall perform any of the work of the trade. There shall be no restrictions on the emergency use of any tools or equipment by any qualified employee or on the use of any tools or equipment for the performance of work within the employee's jurisdiction.

Section 3. Supervision

Employees shall work under the supervision of the craft foreperson or general foreperson.

Section 4. Travel Allowances

There shall be no payments for travel expenses, travel time, subsistence allowance or other such reimbursements or special pay except as expressly set forth in this Agreement and in the applicable Schedule limited to travel expenses.

Section 5. Full Work Day

Employees shall be at their staging area at the starting time established by the Contractor and shall be returned to their staging area by quitting time after performing their assigned functions under the supervision of the Contractor. The signatories reaffirm their policy of a fair day's work for a fair day's wage.

Section 6. Cooperation

The BTC and the Local Unions will cooperate in seeking any New Jersey statutory Department of Labor approvals that may be required for implementation of any terms of this Agreement.

ARTICLE 17 - SAVINGS AND SEPARABILITY

Section 1. Partial Invalidity

In the event that the application of any provision of this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law, the provision involved shall be rendered, temporarily or permanently, null and void but the remainder of the Agreement shall remain in full force and effect. In such event, the Agreement shall remain in effect for contracts already bid and awarded or in construction where the Contractor voluntarily accepts the Agreement. The Parties to this Agreement will enter into negotiations for a substitute provision in conformity with the law and the intent of the Parties for contracts to be let in the future.

Section 2. The Bid Specifications

In the event that the bid specifications, or other action, requiring that a successful bidder become signatory to this Agreement is enjoined, on either an interlocutory or permanent basis, or otherwise found in violation of law, such requirement shall be rendered, temporarily or permanently, null and void but this PLA shall remain in full force and effect to the extent allowed by law. In such event, the Agreement shall remain in effect for contracts already bid and awarded or where the Contractor voluntarily accepts the Agreement. The Parties will enter in to negotiations as to modifications to the Agreement to reflect the court action taken and the intent of the Parties for contracts to be let in the future.

Section 3. Non-Liability

In the event of an occurrence referenced in Section 1 or Section 2 of this Article 17, neither the Authority, the County, the City, the CM, the Contractor, nor the BTC or its local affiliates shall be liable, directly or indirectly, for any action taken, or not taken, to comply with any court order, injunction or determination. Project bid specifications will be issued in conformance with court orders in effect and no retroactive payments or other action will be required if the original court determination is ultimately reversed.

Section 4. Non-Waiver

Nothing in this Article shall be construed as waiving the prohibitions of Article 7 as to the Contractor and the BTC and its local affiliates.

ARTICLE 18 - FUTURE CHANGES TO COLLECTIVE BARGAINING AGREEMENTS

Section 1. Changes to Area Contracts

- A. The Schedules to this Agreement shall remain in full force and effect until the Contractor and/or the parties to the Area Collective Bargaining Agreements (which are contained in the Schedules) notify the Authority in writing of the mutually agreed upon changes in provisions of such agreements which are applicable to the Project, and their effective dates.
- B. It is agreed that any provisions negotiated into the Area Collective Bargaining Agreements will not apply to work on this Project other than that uniformly required of contractors for work normally covered by those agreements. Nor shall any provisions be recognized or applied on this Project if they may be construed to apply exclusively, or predominantly, to work covered by this PLA.
- C. Any disagreement between signatories to this Agreement over the incorporation into Schedules "A" of provisions agreed upon in the negotiations of Area Collective Bargaining Agreements shall be resolved in accordance with the procedure set forth

in Article 9 of this PLA.

Section 2. Labor Disputes during Area Contract Negotiations

The BTC and the Local Unions agree that there shall be no strikes, work stoppages, sympathy actions, picketing, slowdowns or other disruptive activity or other violations of Article 7 by any Local Union involved in the renegotiation of Area Local Collective Bargaining Agreements nor shall there be any lock-out on the Project of any Local Union during the course of such renegotiations.

THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK

IN WITNESS WHEREOF, the Parties hereto cause these presents to be duly executed as of the day and year first above written.

Witness:

[Name of Successful Bidder]

By: _____

By:_____

Witness:

**Union County Building and Construction
Trades Council, AFL-CIO**

By: _____

By:_____

ADDENDUM NO. 1

**TO PROJECT LABOR AGREEMENT
BY AND BETWEEN _____ AND
THE UNION COUNTY BUILDING AND
CONSTRUCTION TRADES COUNCIL, AFL-CIO**

TELE-DATA WORK

The parties hereby agree that all Tele-data work and associated electrical work performed on any of the sites during construction shall be done by employees represented by the signatory unions. For the purpose of this Agreement, Tele-data work shall include, but not limited to, the following: All receiving, placement, installation, operation, testing, inspection, maintenance, repair and service of radio, television, video, data, voice, sound, emergency call, microwave and visual production and reproduction apparatus, equipment and appliances used for domestic, commercial, education and entertainment purposes; all installation and erection of equipment, apparatus or appliance, cables and/or wire, emergency power (batteries) and all directly related work which becomes an integral part of the telecommunication and/or telecommunications related systems repair and service maintenance work of telecommunications systems and devices including, but not limited to, Private Branch Exchanges (PBX-PABX), Key equipment-owned, CCTV, CATV, card access, Systems RS 232 ethernet and/or any local area network system associated with computer installation.

Witness:

Contractor

By: _____

By: _____

Witness:

Signatory Unions

By: _____

By: _____

ADDENDUM NO. 2

**TO PROJECT LABOR AGREEMENT
BY AND BETWEEN _____ AND
THE UNION COUNTY BUILDING AND
CONSTRUCTION TRADES COUNCIL, AFL-CIO**

SHEET METAL WORK

The Contractor agrees that when subcontracting for prefabrication of H.V.A.C. duct and other related sheet metal, such prefabrication shall be subcontracted to fabricators who pay their employees engaged in such fabrication not less than the prevailing wage for comparable sheet metal fabrication as established under agreements between local affiliates of Sheet Metal Workers' International Association and local sheet metal fabricators.

Contractor and the Sheet Metal Workers' International Association agree to work with fabrication shops referenced in the Addendum. This joint effort will be directed at improving fabricators' competitiveness through the application of continuous improvement principles.

Witness:

Contractor

By: _____

By: _____

Witness:

**Sheet Metal Workers'
International Assoc. Local #25**

By: _____

By: _____

ADDENDUM NO. 3

**TO PROJECT LABOR AGREEMENT
BY AND BETWEEN _____ AND
THE UNION COUNTY BUILDING AND
CONSTRUCTION TRADES COUNCIL, AFL-CIO**

LETTER OF ASSENT

Re: Project Labor Agreement re. Union County Building & Trades Council, AFL-CIO
and Union County Improvement Authority (the "Agreement")

The undersigned, as a General Contractor, Contractor(s) or Subcontractor(s) on a Contract which is part of large project construction for the Union County Improvement Authority, for and in consideration of the award of a Contract to perform work on said Project, and in further consideration of the mutual promises made in the Project Labor Agreement, a copy of which was received and is acknowledged, hereby:

(1) On behalf of itself and all its employees, accepts and agrees to be bound by the terms and conditions of the Project Labor Agreement, together with any and all amendments and supplements now existing or which are later made thereto, and understands that any act of non-compliance with all such terms and conditions will subject the non-complying Contractor or employee(s) to being prohibited from the Project Site until full compliance is obtained.

(2) Certifies that it has no commitments or agreements that would preclude its full compliance with the terms and conditions of said Projects Labor Agreement.

(3) Agrees to secure from any Contractor(s) (as defined in said Project Labor Agreement) which is or becomes a Subcontractor(s) (of any tier), a duly executed Letter of Assent in form identical to this document prior to commencement of any work.

[NAME OF CONTRACTOR]

By: _____

Title: _____

Contract Number _____

Date:

cc: Unions employed by Contractor

SCHEDULE A TO PROJECT LABOR AGREEMENT

COLLECTIVE BARGAINING AGREEMENTS

LOCAL

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name_____

TIME OF COMPLETION

The undersigned agrees that, if awarded the Contract, the scope of work will be started within ten (10) calendar days and will be completed within 365 days from the date of the notice to proceed.

I, _____ of _____
NAME (Print or type) NAME OF COMPANY

agree to complete work in the time frame specified

SIGNATURE

Date: _____, 20____

TITLE



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 not 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 - UNION

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 - UNION

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 1/2 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, holiday 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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

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 - UNION

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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

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	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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

County - UNION

Craft: Cement Mason PREVAILING WAGE RATE

See "Bricklayer, Stone Mason" Rates

Craft: Cement Mason APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									

Ratio of Apprentices to Journeymen - 1:4

Craft: Cement Mason COMMENTS/NOTES

See "Bricklayer, Stone Mason" Rates

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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,

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Veterans' Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Diver

PREVAILING WAGE RATE

	05/01/25
Diver	W65.97 B53.74 T119.71
Tender	W54.23 B53.74 T107.97

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).

DEPTH & PENETRATION RATES: Divers shall be paid the following depth and penetration rates, in addition to the regular hourly rate, when applicable:

AIR DIVES:

0-59 feet: No additional wage
60-74 feet: + \$0.25 per foot
75-125 feet: + \$0.78 per foot

MIXED GAS DIVES:

0-74 feet: No additional wage
75-125 feet: + \$1.00 per foot
126-200 feet: + \$2.00 per foot

PENETRATION DIVES:

126-200 feet: + \$1.50 per foot
201-275 feet: + \$1.75 per foot
276-350 feet: + \$2.00 per foot
351-425 feet: + \$2.50 per foot

SHIFT DIFFERENTIAL:

- 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 an additional 113% of the wage rate.
- When a three shift schedule is established, all three shifts shall be established on an 8 hour basis, but the second and third shifts shall receive an additional 113% of the wage rate.
- Benefits on shift work shall be paid at the straight-time rate.

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.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Veterans' Day may be switched with the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Dockbuilder/Pile Driver

PREVAILING WAGE RATE

	05/01/25
Foreman	W62.36 B53.74 T116.10
Foreman (Concrete Form Work)	W61.26 B40.39 T101.65
Journeyman	W54.23 B53.74 T107.97
Journeyman (Concrete Form Work)	W53.27 B40.39 T93.66

Craft: Dockbuilder/Pile Driver

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
Yearly	21.69	27.12	35.25	43.38						
Benefits	35.34	for all	intervals							

Ratio of Apprentices to Journeymen - *

* When there are 4 or fewer Dockbuilders/Pile Drivers on a job, no more than 1 may be an apprentice. When there are 5 or more Dockbuilders/Pile Drivers, there may be 1 apprentice for every 5 Dockbuilders/Pile Drivers.

Craft: Dockbuilder/Pile Driver

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR CONCRETE FORM WORK ONLY:

INTERVAL	PERIOD AND RATES			
Yearly	21.31	26.64	34.63	42.62
Benefits	27.41	for all	intervals	

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 foreman and one journeyman on drilled or bored soldier piles.
- There shall be one foreman and not less than one journeyman per rig on all drilled shaft and caissons.
- There shall be one foreman and not less than one journeyman per rig on all earth retention tie-back and anchors.
- There shall be one foreman and three journeymen for driving of piles 60 feet or less. As part of the crew, one may be an apprentice.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

CREOSOTE HANDLING:

When handling creosote products on land piledriving, floating marine construction, and construction of wharves, the worker shall receive an additional \$0.25 per hour.

HAZARDOUS WASTE WORK:

- Hazardous waste removal work on a state or federally designated hazardous waste site where Level A, B, or C personal protection is required: an additional 20% of the hourly rate, per hour.
- Hazardous waste removal work in Level D, or where personal protection is not required: an additional \$1.00 per hour.

CERTIFIED WELDER: When required on the job by the project owner, a Certified Welder shall receive an additional \$1.00 per hour.

FOREMAN REQUIREMENTS:

The first Dockbuilder/Pile Driver on the job shall be designated a Foreman.

SHIFT DIFFERENTIAL:

- 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 an additional 113% of the wage rate.
- When a three shift schedule is established, all three shifts shall be established on an 8 hour basis, but the second and third shifts shall receive an additional 113% of the wage rate.
- Benefits on shift work shall be paid at the straight-time rate.

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.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day, Christmas Day. Veterans' Day may be switched with the day after Thanksgiving.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

Craft: Electrician

PREVAILING WAGE RATE

	06/02/25	06/01/26	05/31/27
Cable Splicer	W71.97 B47.29 T119.26	W74.71 B49.10 T123.81	W77.32 B50.81 T128.13
Foreman (11-20 Journeyman)	W76.55 B50.31 T126.86	W79.47 B52.21 T131.68	W82.24 B54.05 T136.29
Foreman (1-3 Journeyman)	W71.97 B47.29 T119.26	W74.71 B49.10 T123.81	W77.32 B50.81 T128.13
Foreman (4-10 Journeyman)	W75.24 B49.44 T124.68	W78.11 B51.33 T129.44	W80.83 B53.12 T133.95
General Foreman (21-30 Journeyman)	W78.52 B51.59 T130.11	W81.51 B53.56 T135.07	W84.35 B55.43 T139.78
General Foreman (31-60 Journeyman)	W85.06 B55.89 T140.95	W88.30 B58.02 T146.32	W91.38 B60.05 T151.43
General Foreman (61+ Journeyman)	W86.37 B56.75 T143.12	W89.65 B58.92 T148.57	W92.78 B60.97 T153.75
Journeyman	W65.43 B43.00 T108.43	W67.92 B44.64 T112.56	W70.29 B46.19 T116.48
Sub-Foreman	W74.59 B49.02 T123.61	W77.43 B50.88 T128.31	W80.13 B52.66 T132.79

Craft: Electrician

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
Yearly	40%	49%	58%	68%	80%		of Jour	neyman	Wage	Rate
Benefit	40%	49%	58%	68%	80%		of Jour	neyman	Benefit	Rate

Ratio of Apprentices to Journeyman - 2:3

Craft: Electrician

COMMENTS/NOTES

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

THESE RATES ALSO APPLY TO THE FOLLOWING:

- All burglar and fire alarm work.
- All fiber optic work.
- Teledata work in new construction.
- Teledata work involving 16 Voice/Data Lines or more.

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

- 1 to 3 Journeymen- 1 must be a Foreman (Foreman/1-3 Journeymen rate).
- 4 to 10 Journeymen- 1 must be a Foreman (Foreman/4-10 Journeymen rate).
- 11 to 20 Journeymen- 1 must be Foreman (Foreman/11-20 Journeymen rate) and 1 must be a Sub-Foreman.
- 21 to 30 Journeymen- 1 must be a General Foreman (General Foreman/21-30 Journeymen rate) and 2 must be a Sub-Foreman.
- 31 to 40 Journeymen- 1 must be a General Foreman (General Foreman/31-40 Journeymen rate) and 3 must be a Sub-Foreman.
- 41 to 50 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 4 must be a Sub-Foreman.
- 51 to 60 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 5 must be a Sub-Foreman.
- 61+ Journeymen- 1 must be a General Foreman (General Foreman/61+ Journeymen rate) and 6 must be a Sub-Foreman.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- 2nd Shift (4:30 PM to 12:30 AM) shall receive 8 hours pay for 7.5 hours work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM) shall receive 8 hours pay for 7 hours work + an additional 15% of the regular rate, per hour, inclusive of benefits.

OVERTIME:

Hours in excess of 8 per day, or outside of the regular workday, 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.

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 - UNION

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

PREVAILING WAGE RATE

	12/02/24
Journeyman Technician (1-2 Workers on Job)	W48.21 B28.45 T76.66
Master Tech/General Foreman (26 + Workers on Job)	W62.67 B36.99 T99.66
Senior Technician/Lead Foreman (16-25 Workers on Job)	W57.37 B33.86 T91.23
Technician A/Foreman (9-15 Workers on Job)	W54.96 B32.43 T87.39
Technician B/Working Foreman (4-8 Workers on Job)	W52.55 B31.01 T83.56
Technician C/Foreman (3 Workers on Job)	W50.14 B29.59 T79.73

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	7.45	7.45	8.51	9.15	10.22	11.49	12.98	14.26	15.76	17.24

Ratio of Apprentices to Journeymen - 2:3

Craft: Electrician - Teledata (15 Voice/Data Lines & Less)

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 11-28-22:

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	7.67	7.67	8.76	9.43	10.52	11.84	13.38	14.69	16.22	17.76

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 12-4-23:

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	7.88	7.88	9.00	9.68	10.80	12.15	13.73	15.09	16.66	18.23

APPRENTICE RATE SCHEDULE FOR THOSE APPRENTICES ENTERING PROGRAM AFTER 12-2-24:

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

INTERVAL	PERIOD AND RATES									
6 Months	35%	35%	40%	43%	48%	54%	61%	67%	74%	81%
Benefits	8.07	8.07	9.22	9.91	11.07	12.45	14.06	15.44	17.06	18.68

NOTES:

- These rates are for service, maintenance, moves, and/or changes affecting 15 Voice/Data (teledata) lines or less. These rates may NOT be used for any teledata work in new construction (including additions) or any fiber optic work.
- The number of Teledata workers on the jobsite is the determining factor for which Foreman category applies .

The regular workday shall be 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) shall receive 8 hours pay for 7.5 hours work + an additional 10% of the regular rate, per hour, inclusive of benefits.
- 3rd Shift (12:30 AM to 8:00 AM) shall receive 8 hours pay for 7 hours 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 Saturday 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 through Friday, between the hours of 7:00 AM and 5:30 PM. A make-up day may be used for a 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.

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

County - UNION

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 - UNION

Craft: Electrician- Outside Commercial

PREVAILING WAGE RATE

	06/03/25	06/01/26	05/31/27
Cable Splicer	W72.30 B46.96 T119.26	W75.05 B48.75 T123.80	W77.67 B50.45 T128.12
Certified Welder	W69.01 B44.83 T113.84	W71.65 B46.54 T118.19	W74.14 B48.16 T122.30
Equipment Operator	W65.73 B42.70 T108.43	W68.23 B44.32 T112.55	W70.61 B45.87 T116.48
Foreman (11-20 Journeymen workers on job)	W76.90 B49.95 T126.85	W79.83 B51.85 T131.68	W82.62 B53.67 T136.29
Foreman (1-3 Journeymen workers on job)	W72.30 B46.96 T119.26	W75.05 B48.75 T123.80	W77.67 B50.45 T128.12
Foreman (4-10 Journeymen workers on job)	W75.58 B49.09 T124.67	W78.47 B50.97 T129.44	W81.21 B52.75 T133.96
General Foreman (21-30 Journeymen workers on job)	W78.88 B51.24 T130.12	W81.88 B53.19 T135.07	W84.74 B55.04 T139.78
General Foreman (31-60 Journeymen workers on job)	W85.45 B55.50 T140.95	W88.70 B57.62 T146.32	W91.80 B59.63 T151.43
General Foreman (61+ Journeymen workers on job)	W86.76 B56.36 T143.12	W90.06 B58.50 T148.56	W93.21 B60.54 T153.75
Groundman	W39.44 B25.62 T65.06	W40.94 B26.60 T67.54	W42.37 B27.52 T69.89
Journeyman Lineman/Technician	W65.73 B42.70 T108.43	W68.23 B44.32 T112.55	W70.61 B45.87 T116.48
Sub-Foreman	W74.93 B48.67 T123.60	W77.79 B50.53 T128.32	W80.50 B52.29 T132.79

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Electrician- Outside Commercial

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
1000 Hours	60%	65%	70%	75%	80%	85%	90%			
Benefits	64.95% of	Journey	man	wage	+ \$.01					

Craft: Electrician- Outside Commercial

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE AS OF 6-1-26:

Interval	Period and Rates									
1000 Hours	60%	65%	70%	75%	80%	85%	90%			
Benefits	64.95% of the Journeyman wage + \$.01									

APPRENTICE RATE SCHEDULE AS OF 5-31-27:

Interval	Period and Rates									
1000 Hours	60%	65%	70%	75%	80%	85%	90%			
Benefits	64.95% of the Journeyman wage + \$.01									

* FOR UTILITY WORK PLEASE SEE STATEWIDE RATES

The regular worday shall be 8 hours, between 8:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

- 1 to 3 Journeymen- 1 must be a Foreman (Foreman/1-3 Journeymen rate).
- 4 to 10 Journeymen- 1 must be a Foreman (Foreman/4-10 Journeymen rate).
- 11 to 20 Journeymen- 1 must be Foreman (Foreman/11-20 Journeymen rate) and 1 must be a Sub-Foreman.
- 21 to 30 Journeymen- 1 must be a General Foreman (General Foreman/21-30 Journeymen rate) and 2 must be a Sub-Foreman.
- 31 to 40 Journeymen- 1 must be a General Foreman (General Foreman/31-40 Journeymen rate) and 3 must be a Sub-Foreman.
- 41 to 50 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 4 must be a Sub-Foreman.
- 51 to 60 Journeymen- 1 must be a General Foreman (General Foreman/31-60 Journeymen rate) and 5 must be a Sub-Foreman.
- 61+ Journeymen- 1 must be a General Foreman (General Foreman/61+ Journeymen rate) and 6 must be a Sub-Foreman.

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, 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 outside of the regular workday, 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.

RECOGNIZED HOLIDAYS:

New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day,

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Thanksgiving Day and Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Elevator Constructor

PREVAILING WAGE RATE

	03/29/23
Journeyman	W77.49 B45.23 T122.72

Craft: Elevator Constructor

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	34.60	42.62	50.37	58.12						
Benefits	35.56	36.49	38.02	39.55						

Ratio of Apprentices to Journeymen - 1:1

Craft: Elevator Constructor

COMMENTS/NOTES

The regular workday shall consist of either 7 or 8 hours to be established at the beginning of the project, between 7:00 AM and 4:30 PM.

OVERTIME:

For all hours worked before or after the regular workday, Monday through Friday, and all hours on Saturday and Sunday, shall be paid at double the hourly rate. Holiday pay is one days wages (8 hours) plus double the hourly rate for all hours worked.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Saturday holidays shall be observed on the previous Friday and Sunday holidays shall be observed on the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Elevator Modernization & Service

PREVAILING WAGE RATE

	03/29/23
Journeyman	W60.89 B44.07 T104.96

Craft: Elevator Modernization & Service

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	34.60	33.49	39.58	45.67						
Benefits	35.50	36.07	37.52	38.97						

Ratio of Apprentices to Journeymen - 1:1

Craft: Elevator Modernization & Service

COMMENTS/NOTES

MODERNIZATION (addition, replacement, refurbishing, relocation, or changes in design or appearance, of elevator equipment in existing buildings):

- The regular workday consists of 8 hours, between 7:00 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 Saturday and Sunday shall be paid at time and one-half the hourly rate. Holiday pay is one days wages (8 hours) plus time and one-half the hourly rate for all hours worked.

SERVICE (repair or replacement of parts for the purpose of maintaining elevator equipment in good operating condition):

- The regular workday consists of 8 hours, between 6:00 AM and 6:00 PM.

- 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 hourly rate. All hours on Sunday and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS (Modernization and Service): New Year's Day, Presidents' Day, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Saturday holidays shall be observed on the previous Friday and Sunday holidays shall be observed on the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

Craft: Heat & Frost Insulator

PREVAILING WAGE RATE

	09/25/24
Foreman	W61.97 B39.22 T101.19
General Foreman	W64.31 B40.33 T104.64
Journeyman	W59.44 B38.66 T98.10

Craft: Heat & Frost Insulator

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	27.89	33.09	39.84	46.51						
Benefits	22.35	26.53	29.50	32.61						

Ratio of Apprentices to Journeymen - 1:3

Craft: Heat & Frost Insulator

COMMENTS/NOTES

NOTE: These rates apply to the installing of insulation on hot and cold mechanical systems.

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM. In addition, the regular workday may also be 8 hours between 6:00 AM and 2:30 PM.

SHIFT DIFFERENTIAL:

- Shift work must run for a minimum of 5 consecutive workdays.
- Second Shift shall work 7.5 hours and receive 8 hours pay, at the regular rate, plus 25% per hour.
- Third Shift shall work 7 hours and receive 8 hours pay, at the regular rate, plus 30% per hour.

OVERTIME:

The first 2 hours in excess of 8 per day, hours outside of 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. All hours in excess of 10 per day, and 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, Veterans' Day, Presidential Election Day, Thanksgiving Day and Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Heat & Frost Insulator - Asbestos Worker

PREVAILING WAGE RATE

	09/25/24
Asbestos Helper Abatement	W36.89 B24.92 T61.81

Craft: Heat & Frost Insulator - Asbestos Worker

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
	SEE	HEAT &	FROST	INSULAT OR						

Ratio of Apprentices to Journeymen - 1:3

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.

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM. In addition, the regular workday may also be 8 hours between 6:00 AM and 2:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 5 consecutive workdays.
- The second shift shall work 7.5 hours and receive 8 hours pay at the regular rate, plus 25% per hour.
- The third shift shall work 7 hours and receive 8 hours pay at the regular rate, plus 30% per hour.

OVERTIME: The first 2 hours in excess of 8 per day, hours outside of 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. All hours in excess of 10 per day, and 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, Presidents' Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Presidential Election Day, Thanksgiving Day and Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

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 facilities, 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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

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 facilities, 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.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

Craft: Ironworker

PREVAILING WAGE RATE

	04/15/25
Rod /Fence Foreman	W53.29 B50.87 T104.16
Rod/Fence Journeyman	W48.44 B50.87 T99.31
Structural Foreman	W55.82 B50.87 T106.69
Structural Journeyman	W50.74 B50.87 T101.61

Craft: Ironworker

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
6 Months	50%	60%		Yearly	70%	80%	90%			
Benefits	same as	journeyma n	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 the Ironworker (Structural) classification, the rate shall be paid at time and one-half the regular rate, inclusive of benefits. When an irregular shift is established for the Rod/Fence classification, the shift shall be established on an 8 hour basis and receive the regular rate, plus 20%.

OVERTIME:

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

County - UNION

- 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 - UNION

Craft: Laborer - Asbestos & Hazardous Waste Removal

PREVAILING WAGE RATE

	08/21/24
Foreman	W45.88 B26.21 T72.09
Journeyman (Handler)	W40.78 B26.21 T66.99

Craft: Laborer - Asbestos & Hazardous Waste Removal

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	22.47	28.55	32.62	36.70						
Benefits	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 (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 - UNION

Craft: Laborer - Building

PREVAILING WAGE RATE

	05/01/25
Class A Journeyman	W40.45 B33.87 T74.32
Class B Journeyman	W39.45 B33.87 T73.32
Class C Journeyman	W33.53 B33.87 T67.40
Foreman	W45.51 B33.87 T79.38
General Foreman	W50.56 B33.87 T84.43

Craft: Laborer - Building

APPRENTICE RATE SCHEDULE

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									
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 (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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

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 - UNION

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

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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, CATS, 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 - UNION

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 - UNION

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 - UNION

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

<u>INTERVAL</u>	<u>PERIOD AND RATES</u>									

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 - UNION

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	COMME R	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 - UNION

Craft: Pipefitter

PREVAILING WAGE RATE

	05/06/25
Foreman	W60.59 B54.63 T115.22
Journeyman	W56.34 B50.80 T107.14

Craft: Pipefitter

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	35%	45%	55%	65%	75%					
Benefit	28.73	32.11	35.49	38.87	42.25					

Ratio of Apprentices to Journeymen - 1:5

Craft: Pipefitter

COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- When there are 2 or more Journeyman Pipefitters on a job, 1 shall be designated a Foreman.
- There shall be a Foreman for every 8 Journeyman Pipefitters on a job.

The regular workday shall be 8 hours between 7:00 AM and 3:30 PM.

SHIFT DIFFERENTIAL:

- 2nd Shift (3:30 PM-11:30 PM) shall work 7.5 hours and receive 8 hours pay at the regular rate, plus 10% per hour on the total rate.
- 3rd Shift (11:30 PM-7:00 AM) shall work 7 hours and receive 8 hours pay at the regular rate, plus 15% per hour on the total rate.

OVERTIME:

- All hours worked in excess of 8 per day, Monday through Friday, and all hours worked on Saturday, shall be paid at time and one-half, inclusive of benefits. All hours on Sunday and holidays shall be paid at double time, inclusive of benefits.
- By mutual agreement, employees may work four 10-hour days, Monday to Thursday, at straight time rate. Friday may be used as a make-up day for a day lost to inclement weather, and may be paid at straight time. If Friday is not a make-up day, the first 8 hours shall be paid at time and one-half, inclusive of benefits; hours in excess of 8 shall be paid at double time, inclusive of benefits.

SHIFT DIFFERENTIAL (Maintenance Work Only):

- 2nd Shift (3:30 PM-11:30 PM) shall work 7.5 hours and receive 8 hours pay at the regular rate, plus 10% per hour on the total rate.
- 3rd Shift (11:30 PM-7:00 AM) shall work 7 hours and receive 8 hours pay at the regular rate, plus 15% per hour on the total rate.

OVERTIME (Maintenance Work Only):

- All hours in excess of 8 per day, Monday through Saturday, shall be paid at time and one-half, inclusive of benefits. All

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

hours on Sundays and holidays shall be paid at double time, inclusive of benefits.

NOTE: Maintenance work is work to repair, restore, or improve the efficiency of existing facilities. This does NOT apply to ANY new construction.

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 are observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Plasterer

PREVAILING WAGE RATE

See Bricklayer, Stone Mason Rates

Craft: Plasterer

COMMENTS/NOTES

See BRICKLAYER, STONE MASON Rates

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Plumber

PREVAILING WAGE RATE

	05/01/25
Foreman	W67.06 B45.40 T112.46
General Foreman	W71.40 B45.40 T116.80
Journeyman	W62.09 B45.40 T107.49

Craft: Plumber

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	35%	45%	55%	65%	75%					
Benefits	19.23	25.20	27.57	29.95	32.32					

Ratio of Apprentices to Journeymen - *

* Employers may employ 1 apprentice on any job where 1 or 2 journeymen are employed. Thereafter, 1 apprentice may be employed for every 4 journeymen.

Craft: Plumber

COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- On any job having 2 or more Plumbers, 1 must be designated a Foreman.
- On any job having 9 or more Plumbers, 2 shall be designated as Foremen.

The regular workday shall consist of 8 hours between 7:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must continue for a minimum of 5 consecutive workdays.
- When two shifts are worked, the second shift shall work 7.5 hours and receive 8 hours pay, at a rate equal to the hourly rate plus 10%, inclusive of benefits.
- When a third shift is worked, the third shift shall work 7 hours and receive 8 hours pay, at a rate equal to the hourly rate plus 15%, inclusive of benefits.

OVERTIME:

- All 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 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.
- 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, 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 - UNION

Craft: Roofer

PREVAILING WAGE RATE

	06/01/25
Foreman	W48.77 B33.34 T82.11
Journeyman	W45.77 B33.34 T79.11

Craft: Roofer

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
6 Months	17.80	22.26	26.71	28.94	31.16	33.39	35.62	40.07		
Benefits	2.19	2.19	28.34	28.34	28.34	28.34	28.34	28.34		

Ratio of Apprentices to Journeymen - *

- * A) For roofing jobs that are of the 1 or single ply nature: 1:2 or fraction thereof
- B) For roofing jobs on new built up roofs: 1:3 or fraction thereof
- C) For roofing jobs that are of a tear-off nature: 1:2 or fraction thereof
- D) For roofing jobs (not requiring complete removal of existing systems, installation done over existing roof): 1:3 or fraction thereof

Craft: Roofer

COMMENTS/NOTES

APPRENTICE RATE SCHEDULE AS OF 6-1-25:

INTERVAL	PERIOD AND RATES									
6 Months	18.30	22.88	27.46	29.75	32.03	34.33	36.62	41.19		
Benefits	2.44	2.44	29.09	29.09	29.09	29.09	29.09	29.09		

Pitch: +.50 per hour

Mop Man: +.30 per hour

The regular workday consists of 8 hours between 8:00 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 regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, Good Friday, 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 - UNION

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 through 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 - UNION

Craft: Sheet Metal Worker

PREVAILING WAGE RATE

	06/13/24
Foreman	W61.90 B50.32 T112.22
General Foreman	W62.90 B50.32 T113.22
Journeyman	W57.90 B50.32 T108.22

Craft: Sheet Metal Worker

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
Yearly	45%	48%	52%	65%	of	Journey	man	Wage	Rate	
Benefit	45%	48%	52%	65%	of	Journey	man	Benefit	Rate	

Ratio of Apprentices to Journeymen - 1:4

Craft: Sheet Metal Worker

COMMENTS/NOTES

FOREMAN REQUIREMENTS:

- When there are 2 or more Sheet Metal Workers on a project, 1 must be designated a Foreman.
- When there are 17 or more Sheet Metal Workers on a project, 1 must be designated a General Foreman.
- When there is only 1 Sheet Metal Worker (1 Journeyman) on a project, he/she shall receive \$1.00 more than the regular Journeyman's rate.

The regular workday is 8 hours between 7:00 AM and 4:30 PM.

SHIFT DIFFERENTIAL:

- 2nd Shift (3:30 PM - 12:00 AM) : +17% of regular hourly rate
- Shift work must run for a minimum of 5 consecutive workdays.

OVERTIME:

- Hours in excess of 8 per day, or before or after the regular workday, that are not shift work, and the first 10 hours on Saturdays shall be paid at time and one-half of the regular rate, inclusive of benefits. Hours in excess of 10 per day on Saturday, and all hours on Sundays and holidays shall be at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Friday, at straight time, with hours in excess of 10 per day, and hours in excess of 40 per week paid at the overtime rates listed above.

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. Sunday holidays will be observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Sprinkler Fitter

PREVAILING WAGE RATE

	01/01/25
Foreman	W72.47 B40.30 T112.77
General Foreman	W76.12 B40.30 T116.42
Journeyman	W67.97 B40.30 T108.27

Craft: Sprinkler Fitter

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1000 Hours									80%	85%
Benefits							Intervals	9 to 10	Jourymn	Ben.

Craft: Sprinkler Fitter

COMMENTS/NOTES

Apprentice rate schedule for those apprentices registered as of 7-1-13:

Interval Period and Rates
1000 Hrs. 25% 30% 40% 45% 55% 60% 70% 75% 85% 90%
Ben. 14.90 14.90 31.30 31.30 31.30 31.30 Intervals 7-10 Journey. Ben.

Apprentice rate schedule for those apprentices registered as of 7-1-22:

Interval Period and Rates
1000 Hrs. 30% 35% 40% 45% 50% 55% 60% 70% 85% 95%
Ben. 14.90 14.90 31.30 31.30 31.30 31.30 Intervals 7-10 Journey. Ben.

The regular workday consists of 8 consecutive hours between 6:00 AM and 4:30 PM.

FOREMAN REQUIREMENTS:

- The first Sprinkler Fitter on the job must be designated a Foreman.
- On any job having 12 or more Sprinkler Fitters, one must be designated a General Foreman.

SHIFT DIFFERENTIALS:

- Shift work must run for a minimum of 2 consecutive workdays.
- 2nd and 3rd shift shall receive an additional 15% of the regular rate, per hour.
- Any "off hours" shift starting at 8:00 PM or later shall receive an additional 25% of the regular rate, per hour.

OVERTIME:

The first 2 hours in excess of 8 per day, after the regular workday that are not shift work, Monday through Friday, shall be paid at time and one-half the regular rate. Hours worked in excess of 10 per day, Monday through Friday, and all hours on Saturday, Sunday and holidays, shall be paid double the regular rate.
Four 10 hour days may be worked, Monday through Friday, at straight-time.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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 - UNION

Craft: Tile Finisher-Marble

PREVAILING WAGE RATE

	01/08/25
Finisher	W50.22 B37.84 T88.06

Craft: Tile Finisher-Marble

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	40%	60%	65%	70%	75%	85%	95%			
Benefits	Interval 1	thru 5 =	75% of	jyrnm. ben	rate	Interval 6	thru 7 =	full jyrnm	benefit	rate

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Finisher-Marble

COMMENTS/NOTES

OVERTIME:

Hours in excess of 7 per day, Monday through Friday, and the first 7 hours on Saturdays shall be paid at time and one half the regular rate, inclusive of benefits. Hours in excess of 7 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, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Setter - Ceramic

PREVAILING WAGE RATE

	12/03/24
Finisher	W49.21 B33.44 T82.65
Setter	W64.16 B36.72 T100.88

Craft: Tile Setter - Ceramic

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	35%	40%	50%	55%	60%	65%	70%	75%	80%	90%

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Setter - Ceramic

COMMENTS/NOTES

OVERTIME:

Hours in excess of 7 per day, and the first 10 hours on Saturdays shall be paid at time and one-half the hourly rate. All hours on Saturdays after 10 hours shall be paid double the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Setter - Marble

PREVAILING WAGE RATE

	01/08/25
Tile Setter	W64.21 B40.66 T104.87

Craft: Tile Setter - Marble

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
750 Hours	40%	60%	65%	70%	75%	85%	95%			
Benefits	Interval 1	thru 5 =	75% of	jyrnm. ben	rate	Interval 6	thru 7 =	full jyrnm	benefit	rate

Ratio of Apprentices to Journeymen - 1:4

Craft: Tile Setter - Marble

COMMENTS/NOTES

OVERTIME:

Hours in excess of 7 per day, Monday through Friday, and the first 7 hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. Hours in excess of 7 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, Good Friday, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Tile Setter - Mosaic & Terrazzo

PREVAILING WAGE RATE

	01/01/25
Grinder or Assistant	W59.72 B42.19 T101.91
Mechanic	W61.33 B42.20 T103.53
Terrazzo Resinous Worker	W51.02 B34.49 T85.51

Craft: Tile Setter - Mosaic & Terrazzo

APPRENTICE RATE SCHEDULE

INTERVAL	PERIOD AND RATES									
1500 Hours	35%	45%	60%	70%	80%	90%				

Ratio of Apprentices to Journeymen - 1:5

Craft: Tile Setter - Mosaic & Terrazzo

COMMENTS/NOTES

The regular workday consists of 7 hours, between 8:00 AM and 3:30 PM.

OVERTIME:

- Hours in excess of 7 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 hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Good Friday, Monday after Easter, Memorial Day, July 4th, Labor Day, Columbus Day, Veterans' Day, Thanksgiving Day and the day after, Christmas Day. Sunday holidays observed the following Monday.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Truck Driver

PREVAILING WAGE RATE

	05/16/25	05/01/26	05/01/27
Bucket, Utility, Pick-up, Fuel Delivery trucks	W46.41 B45.28 T91.69	W47.41 B47.28 T94.69	W48.41 B49.03 T97.44
Dump truck, Asphalt Distributor, Tack Spreader	W46.41 B45.28 T91.69	W47.41 B47.28 T94.69	W48.41 B49.03 T97.44
Euclid-type vehicles (large, off-road equipment)	W46.51 B45.28 T91.79	W47.51 B47.28 T94.79	W48.51 B49.03 T97.54
Helper on Asphalt Distributor truck	W46.41 B45.28 T91.69	W47.41 B47.28 T94.69	W48.41 B49.03 T97.44
Low Boy Driver	W48.51 B45.28 T93.79	W49.51 B47.28 T96.79	W50.51 B49.03 T99.54
Slurry Seal, Seeding/Fertilizing/ Mulching truck	W46.41 B45.28 T91.69	W47.41 B47.28 T94.69	W48.41 B49.03 T97.44
Straight 3-axle truck	W46.41 B45.28 T91.69	W47.41 B47.28 T94.69	W48.41 B49.03 T97.44
Tractor Trailer (all types)	W46.51 B45.28 T91.79	W47.51 B47.28 T94.79	W48.51 B49.03 T97.54
Vacuum or Vac-All truck (entire unit)	W46.41 B45.28 T91.69	W47.41 B47.28 T94.69	W48.41 B49.03 T97.44
Winch Trailer	W46.61 B45.28 T91.89	W47.61 B47.28 T94.89	W48.61 B49.03 T97.64

Craft: Truck Driver

COMMENTS/NOTES

BLENDED RATE:

When a truck driver is performing work on the 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.

HAZARDOUS WASTE REMOVAL:

- On hazardous waste removal work on a State designated hazardous waste site where the driver is in direct contact with hazardous materials and when personal protective equipment is required for respiratory, skin, and eye protection, the driver shall receive an additional \$3.00 per hour (with or without protective gear).
- A hazardous waste related certified worker at a designated hazardous waste site who is not working in a zone requiring level A, B or C personal protection shall receive an additional \$1.00 per hour.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

TRUCK FOREMAN: \$1.00 per hour above regular rate. Overtime shall be increased accordingly.

The regular workday shall be 8 hours, starting between 6:00 AM and 8:00 AM.

SHIFT DIFFERENTIAL:

- Shifts starting at 4:00 PM (2nd Shift): + \$5.00 per hour.
- Shifts starting at 12:00 AM (midnight/3rd Shift): time and one-half the hourly rate.
- Shifts starting at a time other than from 6:00 AM to 8:00 AM, when such hours are mandated by the project owner: + \$5.00 per hour.

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 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.
- Employees may work four 10-hour days at straight time, Monday through Thursday, with Friday used as a make-up day for a lost day. If Friday is not a make-up day, then all hours on Friday shall be paid at time and one-half the hourly rate.
- Benefits on overtime shall be \$45.03.
- Benefits on overtime on 5-1-26 shall be \$47.03.
- Benefits on overtime on 5-1-27 shall be \$48.78.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day (Decoration Day), July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. The day after Thanksgiving may be substituted for Veteran's Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

Craft: Truck Driver-Material Delivery Driver

PREVAILING WAGE RATE

	05/16/25	05/01/26	05/01/27
Driver	W37.12 B45.28 T82.40	W37.82 B47.28 T85.10	W38.72 B49.03 T87.75

Craft: Truck Driver-Material Delivery Driver

COMMENTS/NOTES

BLENDED RATE:

When a truck driver is performing work on the site and also serving as a material delivery driver, the driver shall be paid a "blended rate". See the "Truck Driver" craft for the blended rates.

Truck Foreman/Shop Steward: +\$0.25 per hour

SHIFT DIFFERENTIALS:

- 2nd Shift shall receive an additional \$0.50 per hour
- 3rd Shift shall receive time and one-half the hourly rate.

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 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.

RECOGNIZED HOLIDAYS: New Year's Day, President's Day, Memorial Day (Decoration Day), July 4th, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays will be observed the following Monday. The day after Thanksgiving may be substituted for Veterans Day.

**NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION**

County - UNION

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

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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
58.88	39.15	98.03	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 additional \$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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
58.88	39.15	98.03	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
56.97	39.15	96.12	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 (Hetzl, Rexomatic & similar types)
- Concrete Vibrator

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
56.97	39.15	96.12	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
56.97	39.15	96.12	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

Skimmer Machine (boom type)

Steel Cutting Machine (service & maintenance)

Tamrock Drill

Tractor

Transfer Machines

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
56.97	39.15	96.12	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
51.63	39.15	90.78	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
49.05	39.15	88.20	90.70

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

OPERATING ENGINEERS

Rates Expiration Date :

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
59.21	39.15	98.36	100.86

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (minimum)

OPERATING ENGINEERS **Rates Expiration Date :**

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
60.47	39.15	99.62	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

Helicopter Co-Pilot

Helicopter Communications Engineer

Juntann Pile Driver

Locomotive (large)

Mucking Machine

OPERATING ENGINEERS

Rates Expiration Date :

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
60.47	39.15	99.62	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
55.34	39.15	94.49	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
55.34	39.15	94.49	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
62.29	39.15	101.44	103.94

CLASSIFICATIONS:

Helicopter Pilot/Engineer

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
66.97	39.15	106.12	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
65.97	39.15	105.12	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
62.47	39.15	101.62	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
64.97	39.15	104.12	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
61.47	39.15	100.62	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
64.10	39.15	103.25	105.75

CLASSIFICATIONS:

Helicopter Co-Pilot & Communications Engineer

STRUCTURAL STEEL ERECTION

Rates Expiration Date :

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
60.04	39.15	99.19	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
57.38	39.15	96.53	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
55.85	39.15	95.00	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
52.09	39.15	91.24	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
59.66	39.15	98.81	101.31

CLASSIFICATIONS:

- Lead Engineer, Foreman Engineer, Safety Engineer (Minimum)

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
49.05	39.15	88.20	90.70

CLASSIFICATIONS:

- Field Engineer - Rodman or Chainman

STRUCTURAL STEEL ERECTION

Rates Expiration Date :

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
60.80	39.15	99.95	102.45

CLASSIFICATIONS:

Field Engineer-Chief of Party

Vacuum Truck

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
68.99	39.15	108.14	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
67.33	39.15	106.48	108.98

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), 100 tons and over and Tower Crane.

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
64.49	39.15	103.64	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
62.83	39.15	101.98	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
64.49	39.15	103.64	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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
60.47	39.15	99.62	102.12

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
53.63	39.15	92.78	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

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

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)

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

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:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
59.22	39.15	98.37	100.87

CLASSIFICATIONS:

Driller

Effective Dates:

07/01/2024			07/01/2025
Rate	Fringe	Total	Total
52.38	39.15	91.53	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

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

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:

03/01/2017

Rate	Fringe	Total
36.50	21.27	57.77

CLASSIFICATIONS:

Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
33.80	21.27	55.07

CLASSIFICATIONS:

Box man

Effective Dates:

03/01/2017

Rate	Fringe	Total
31.75	21.27	53.02

CLASSIFICATIONS:

Microsurface/Slurry Preparation

Effective Dates:

03/01/2017

Rate	Fringe	Total
31.75	21.27	53.02

CLASSIFICATIONS:

Squeegee man

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

MICROSURFACING/SLURRY SEAL Rates Expiration Date :

Effective Dates:

03/01/2017

Rate	Fringe	Total
30.30	21.27	51.57

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

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

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" :

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

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:

06/13/2024

Rate	Fringe	Total
57.34	35.90	93.24

CLASSIFICATIONS:

Pipeline Journeyman Welder

PIPELINE - MAINLINE TRANSMISSION

Rates Expiration Date :

Effective Dates:

06/13/2024

Rate	Fringe	Total
57.34	35.90	93.24

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

06/13/2024

Rate	Fringe	Total
33.84	25.02	58.86

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

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

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

ELECTRICIAN- UTILITY WORK (NORTH)

Rates Expiration Date :

Effective Dates:

12/01/2024

Rate	Fringe	Total
61.16	42.20	103.36

CLASSIFICATIONS:

Special License Operator

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

ELECTRICIAN- UTILITY WORK (NORTH)

Rates Expiration Date :

Effective Dates:

12/01/2024

Rate	Fringe	Total
68.50	47.26	115.76

CLASSIFICATIONS:

Line Foreman

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

ELECTRICIAN- UTILITY WORK (NORTH)

Rates Expiration Date :

Effective Dates:

12/01/2024

Rate	Fringe	Total
39.75	27.42	67.17

CLASSIFICATIONS:

Groundman 2nd Year

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 workday 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 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

TERRITORY
ENTIRE STATE

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

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
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)

UNION COUNTY IMPROVEMENT AUTHORITY

**Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey**

Bidder's Name_____

TIME OF COMPLETION

The undersigned agrees that, if awarded the Contract, the scope of work will be started within ten (10) calendar days and will be completed within 365 days from the date of the notice to proceed.

I, _____ of _____
NAME (Print or type) NAME OF COMPANY

agree to complete work in the time frame specified

SIGNATURE

Date: _____, 2022

TITLE

UNION COUNTY IMPROVEMENT AUTHORITY

Gerry B. Green Plaza Alterations
200 West 2nd Street, Plainfield, New Jersey

Bidder's Name _____

AGREEMENT FOR USE OF BID DOCUMENTS IN ELECTRONIC FORM

This Agreement is made in reference to the following project: **Gerry B. Green Plaza Alterations** ("Project") for **Union County Improvement Authority** ("Owner").

The Union County Utilities Authority (UCIA) will provide to _____ ("Recipient") certain drawings, specifications and other documents prepared by RSC Architects, LLC ("RSC") in electronic or other machine-readable format. These documents shall be referred to herein as the "Electronic Documents." It is understood and agreed that Recipient may wish to make certain Electronic Documents available to other individuals and entities in connection with the Project. This Agreement is intended to govern the use of the Electronic Documents by the Recipient and other individuals and entities.

In consideration of RSC's agreement to release the Electronic Documents to Recipient, Recipient agrees as follows:

1. Any distribution by Recipient of all or any portion of the Electronic Documents shall be limited for use on this Project only. Such distribution is subject to RSC's approval and may be made only after written notice is given to RSC by Recipient, and any additional recipient agrees in writing to be bound by the terms of this Agreement.

2. This Agreement shall be incorporated in the General Conditions for the Contract for Construction and shall become binding on all parties who use the Electronic Documents. Any individual or entity, including the Owner, to whom RSC release all or any portion of the Electronic Documents, or who thereafter receives all or any portion of the Electronic Documents, shall be a Recipient for purposes of this Agreement.

3. All drawings, specifications or other documents of any kind prepared by RSC as the case may be, whether in hard copy or any electronic or machine readable format including the Electronic Documents (collectively the "RSC Documents"), are instruments of RSC's services prepared solely for use in connection with the Project. RSC shall reserve all rights, including copyrights, for their respective Documents. This Agreement is not intended in any way to alter the respective interests of the parties in the RSC Documents as may be set forth in any other agreement, notwithstanding RSC's agreement to release the Electronic Documents to Recipient.

4. The Electronic Documents are provided to the Recipient in connection with the Recipient's performance of its responsibilities and obligations relating to the Project, including bidding. RSC shall retain a set of paper copies of the Electronic Documents, which Recipient may review at the UCIA at a mutually agreeable time. If it is determined that any difference exists between the paper copies and the Electronic Documents, the paper copies shall be presumed to be correct and take precedence over the Electronic Documents, unless RSC specifically advises

Recipient to the contrary in writing.

5 The parties agree that the Electronic Documents are not, and shall not be construed to be, a product. It is expressly agreed by the Recipient that there are no warranties of any kind in the Electronic Documents or in the media in which they are contained, either express or implied.

6. Recipient agrees not to add to, delete from, or otherwise modify or alter in any way, or to allow others to add to, delete from, or otherwise modify or alter in any way, the Electronic Documents or any copies Recipient prints from the Electronic Documents. Recipient recognizes that additions, deletions, alterations or modifications to the RSC Documents introduced by anyone other than RSC, as the case may be, may result in adverse consequences that RSC can neither predict nor control. Therefore, even in the event that RSC may have specifically given the Recipient permission to use the Electronic Documents in connection with Recipient's obligation to prepare certain documents for the Project which requires Recipient to add to, delete from, modify or alter the RSC Documents, Recipient shall be subject to the provisions of Paragraphs 9 and 10 of this Agreement. Furthermore, if Recipient receives RSC's permission to add to, delete from, modify or alter the RSC Documents, Recipient shall, in addition to the other obligations set forth herein, remove RSC's title block, as the case may be, from the paper copy of the Electronic Documents used by Recipient.

7. The Electronic Documents are supplied in the following format: **PDF Format**.

Any conversion of the format is solely the responsibility of the Recipient. Recipient understands and agrees that the conversion of the paper copies of the RSC Documents into electronic or machine-readable format or the conversion of the Electronic Documents from the machine-readable formats to a different format may introduce errors and inaccuracies. Recipient therefore agrees to confirm the accuracy of the Electronic Documents before using them. Recipient shall accept all responsibility for any errors or inaccuracies and shall release RSC and the UCIA from any liability or claims for recovery of damages or expenses arising as the result thereof.

8. Recipient further agrees that the RSC Documents were prepared for use in connection with this Project only, and that the Electronic Documents are supplied to Recipient only for the limited purpose stated herein. Recipient agrees not to use, or allow others to use, the Electronic Documents, in whole or in part, for any purpose or project other than as stated herein.

9. Recipient agrees to waive any and all claims and liability against RSC and the UCIA, and their respective subconsultants and consultants, as the case may be, arising under this Agreement or as a result of Recipient's use of the Electronic Documents.

10. Recipient agrees to indemnify and save harmless RSC and their respective subconsultants, and each of their partners, officers, shareholders, directors and employees, and the Owner and its officers and employees and professionals, from any and all claims, judgments, suits, liabilities, damages, costs or expenses (including reasonable defense and attorneys fees) arising as the result of 1) Recipient's failure to comply with any of the requirements of this Agreement; or 2) a defect, error or omission in the Electronic Documents or the information contained therein, which defect, error or omission was not contained in the paper copies of the Contract Documents; or 3) from any addition, deletion, modification or alteration to, or the misinterpretation of the Electronic Documents.

RECIPIENT

Name: _____ **Date:** _____
Title: _____
Company: _____

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.

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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)

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§ 8.3 The Contractor’s representative:

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

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§ 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)

« »« »

(Printed name and title)

CONTRACTOR (Signature)

« »« »

(Printed name and title)

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)

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THE OWNER:

(Name, legal status, and address)

<< >><< >>
<< >>

THE ARCHITECT:

(Name, legal status, and address)

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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.

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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 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

ARTICLE 1. GENERAL PROVISIONS

and 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.

§ 2.3.2 The Owner shall prepare and file the Work fully disclosed to practice Contract Documents with a duly practicing

§ 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

~~§ 13.2.3 The Contractor shall be responsible for inspection of portions of the Project in the field prior to construction to determine~~

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 a 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

required for 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 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 interpretable 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,

§ 4.2.17 If the Owner and Architect agree, the Architect will provide such assistance to Project representatives to assist in

§ 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 proper, 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

review the Application and certify the amount the Construction Manager determines is due each of the Contractors; 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. 3. expenses arising from the Contractor's failure to make payments properly payable to any Subcontractor or Subsupplier for labor, materials

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

Upon receipt of the notice, the Owner shall determine the stage of the progress of the Work and shall notify the Contractor. If 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

§ 19.5 Acceptance of such payment is not a bar to recovery of the contract price, and the contractor 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

given to the other party within the reasonable conditions, as defined in the Agreement. The owner shall conduct

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,

Document Title: Contractor, 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

Manager or shall be entitled to an equitable adjustment to the Contract. (9) Other Contractors and 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)

initiate the claim 21 days after the Decision of the Arbitral Tribunal giving rise to the Claim or within 21 days after the Arbitral Tribunal's first

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.

SUPPLEMENTARY CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

CONSTRUCTION MANAGEMENT EDITION

ARTICLE 16

MODIFICATION OF THE GENERAL CONDITIONS
OF AIA DOCUMENT A232-2019 - GENERAL CONDITIONS OF THE CONTRACT
FOR CONSTRUCTION, CONSTRUCTION MANAGER AS ADVISER EDITION
(the "GENERAL CONDITIONS")

16.1 PRECEDENCE

- 16.1.1 Wherever these Supplementary Conditions make deletions, revisions, and insertions to the General Conditions, the Supplementary Conditions shall take precedence over the General Conditions.

16.2 MODIFICATIONS OF ARTICLE 1. CONTRACT DOCUMENTS

- 16.2.1 Add the following under Paragraph 1.1:

1.1.9 ENUMERATION OF THE DRAWINGS, SPECIFICATIONS AND ADDENDA

The Drawings and Specifications which form a part of this Contract are enumerated in the List of Drawings and the List of Contents of the Specifications. The Addenda which form a part of this Contract are enumerated in Article 9 of the Owner-Contractor Agreement.

- 16.2.2 Add the following under Paragraph 1.4:

1.4.1 The Architect shall be the sole interpreter of the plans and specifications and the Contractor's performance therewith. It is the intent of these plans and specifications to provide materials of a quality consistent with the average of those provided under similar circumstances in the same general geographical area. The Architect shall be the sole authority in making such determination.

16.3 MODIFICATIONS OF ARTICLE 2. OWNER

- 16.3.1 Delete Subparagraph 2.2.3 in its entirety.

- 1.6.3.2 Delete Subparagraph 2.2.5 in its entirety and insert the following:

2.2.5 The Architect shall furnish the Contractor, without charge, the following number of sets (black line prints) of drawings and specifications. The Contractor shall make his own additional sets at their expense.

General Contractor - 3 sets

16.4 MODIFICATIONS OF ARTICLE 3. CONTRACTOR

- 16.4.1 Add the following under Paragraph 3.2:

3.2.5 The Contractor shall forward, through the Construction Manager, to the Architect written request for supplementary drawings and data needed by him to carry on his work. Such request shall be timed so as to enable the Construction Manager and the Architect to properly act well in advance of need at the site.

- 16.4.2 Add the following under Paragraph 3.6

3.6.1 All Contractors, subcontractors, suppliers, etc. are required to pay all applicable taxes as required by law, outside of those taxes for which the Union County Improvement Authority is exempt.

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16.4.3 Delete Subparagraph 3.7.1 and substitute the following:

3.7.1.1. All fees and charges, including engineer review charges are the responsibility of the Contractor for the Work in question. The Contractor is responsible for procuring all permits required by the Bidding and Contract Requirements and by law.

3.7.1.2 If a permit fee is required, the Contractor shall pay the fee s and be reimbursed by the Owner upon presentation of receipt for same for the cost of the fee only.

3.7.1.3 If a fee is required for any utilities connection, the Contractor shall pay the fee and be reimbursed by the Owner upon presentation of a receipt for same for the fee only. .

16.4.5 Add the following under Subparagraph 3.12.8:

3.12.8.1 Work performed contrary to this procedure shall be at the risk and expense of the Contractor. All shop drawings used for fabrication and erection shall be those approved by the Architect, without change. If change is found to be necessary on any approved shop drawing, product data or sample, it shall be resubmitted for record purposes only.

Add the following under Paragraph 3.12.6

3.12.6.1 All shop drawings shall be submitted within 90 calendar days of the Notice to Proceed, unless required earlier for the progress of the project. No monthly Applications for Payment will be processed thereafter until all shop drawings have been submitted.

16.5 INTENTIONALLY OMITTED

16.6 MODIFICATIONS OF ARTICLE 5. SUBCONTRACTORS

16.6.1 Delete Subparagraph 5.2.1 in its entirety and insert the following:

5.2.1 Within 15 days after Notice to Proceed, the Contractor shall furnish to the Construction Manager in writing for review by the Owner, Construction Manager, 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 Construction Manager will promptly notify the Contractor in writing if either the Owner, Construction Manager or Architect, after due investigation, has reasonable objection to any names on such list. Failure of the Owner, Construction Manager, and Architect to make objection within 10 working days to any name on the list shall constitute acceptance of such name.

5.2.1.1 In submitting the names of Subcontractors, 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 Subcontractor, 3) the name and address of all Sub-subcontractors for each significant subdivision of the trade or work, and if required by the Construction Manager, 4) reference in the form of a list of at least 3 jobs similar in size and quality to this Project performed in the last 5 years, with name and location of work, dollar value and names of the Owner and Architect.

5.2.1.2 In submitting sources of 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.

16.7 MODIFICATION OF ARTICLE 8. TIME

16.7.1 Add the following Paragraph under Article 8:

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8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 The Owner shall have right to defer the beginning or to suspend the whole or any part of the Work herein Contracted to be done whenever, in the opinion of the Architect/Engineer, it may be necessary or expedient for the Owner to do so. If the Contractor is delayed in completion of the Work by any act or neglect or default of the Owner or of any other Contractor employed by the Owner, or by changes ordered in the Work, or by strikes, lockouts, fire, unusual delay by common carriers, unavoidable casualties, or any cause beyond the Contractor's control or by any cause which the Architect/Construction Manager shall decide to justify the delay, then for all such delays and suspensions the Contractor shall be allowed one day additional to the time limitations herein stated for each and every day of such delay so caused in the completion of the Work, the same to be ascertained solely by the Architect/Construction Manager, and a similar allowance of extra time will be made for such delays as the Architect/Construction Manager may find to have been caused by the Owner.

- (1) No such extensions of time shall be made for any one or more delays unless within 24 hours after the beginning of such delays a written request for additional time shall be filed with the Architect/Construction Manager. In case of a continuing cause of delay, only one request is necessary.
- (2) No claim for damages or any claim other than for extensions for time as herein provided shall be made or asserted against the Owner/Architect /Construction Manager by reason of any of the delays herein mentioned.
- (3) Anything contained in the Contract to the contrary notwithstanding, the Contractor shall not be entitled to damages or extra compensation.

8.3.4 Where the cause of delay is due to 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 low temperature) for the past five years for the month in question, plus 10 percent. In other words, weather is not deemed to be unusually severe unless it is 10 percent worse than the average for that month over the last five years.

8.3.5. Apart from extension of time, and notwithstanding anything to the contrary in the General Conditions, no payment or allowance of any kind shall be made to the Contractor as compensation for damages on account of hindrance or delay from any cause in the progress of the Work, whether such delay be avoidable or unavoidable, unless such delay is caused solely by the act(s) of the Owner. The Contractor agrees that he will make no claim for compensation, damages for any such delays, and will accept in full satisfaction for such delays said extension of time.

8.4 COMPLETION AND LIQUIDATED DAMAGES

8.4.1 The Contractor shall substantially complete all the Work included in the Contract Documents ready for the Owner's utilization and occupancy as defined in Subparagraphs 8.1.3 of the General Conditions within the time stated in these Documents subject to extensions of Contract time as provided in Paragraph 8.3 of the General Conditions.

8.4.2 Pursuant to the provisions of Subparagraph 8.4.1, for each calendar day delay in said completion, the Contractor shall pay to the Owner as liquidated damages, and not as a penalty, the sum noted in Section 1.32 of the Request for Bids, and each Contractor and his surety shall be liable for the amount thereof.

8.4.3 Any delay attributable to lack of coordination or cooperation by or between the Contractor and his Subcontractors will not be recognized by the Owner as the basis for any claim for increase in the Contract Sum, but shall be settled as provided in Paragraph 6.2 of the General and Supplementary Conditions.

8.4.4 In the event of the failure of the Contractor to complete the said Work within the time stated in his

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proposal, the Contractor shall be liable to the Owner in the sum listed in these documents for each calendar day that the Work shall be and remain in an incomplete state of construction, alteration or repair, as the case may be, and for added administrative and inspection costs to the Owner on account of delay. The liquidated damages provided for herein shall not prevent the Owner, in the alternative, from seeking other consequential losses or damages that the Owner may incur by reason of such delay, such as, but not limited to, added costs of the project and the cost of furnishing temporary services, if any. Any such sums for which the Contractor is liable may be deducted by the Owner from any monies owed to the Contractor.

8.4.5 It is hereby understood and mutually agreed, by and between the Contractor and the Owner, that the date of beginning and the time for completion of the Contract are ESSENTIAL CONDITIONS of this Contract; and it is further mutually understood and agreed that the Work embraced in this Contract shall be commenced on a date to be specified in the "Notice to Proceed".

8.4.5.1 The Contractor agrees that the Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time stated in the Bidding and Contract Requirements and the Contractor's proposal.

8.4.6 If the Contractor shall neglect, fail or refuse to complete the Work within the time herein specified, or any proper extension thereof granted by the Owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified, not as a penalty but as liquidated damages for such breach of Contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the Work.

8.4.6.1 Liquidated Damages in the amount set forth in the Bidding and Contract Requirements is fixed and agreed upon by and between the Contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would sustain for such breach, and said amount is agreed to be the amount of damages the Owner would sustain. Liquidated Damages shall be retained from time to time by the Owner from current periodical estimates.

8.4.6.2 The Contractor shall not be charged with liquidated damages or any excess cost if the Owner has determined that the Contractor is without fault and the Contractor's reasons for a request for an extension of time are acceptable to the Owner. The Contractor shall not be charged with liquidated damages of any excess cost when the delay in the completion of the Work is due to:

- a. any preference, priority or allocation order duly issued by the Owner;
- b. unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner which acts are contrary to the terms of such contract, fires, floods, epidemics, quarantine restrictions, freight embargoes, and severe weather; as defined herein, and
- c. any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (a) and (b) of this article:
- d. provided, further, that the Contractor shall, within 24 hours from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the Owner, in writing of the causes of the delay. The Owner shall first ascertain the facts and extent of the delay and notify the Contractor within a reasonable time that good cause has been shown to warrant the granting of an extension.

8.4.7. It is further agreed that time is of the essence of each and every portion of this Contract and the specifications wherein a definite and certain length of time is fixed for performance of any act whatsoever. In the event additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall be of the essence of this Contract.

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8.4.7.1 If job progress has been adversely affected by the unexcused non-attendance of the Contractor at a scheduled job meeting of which he has been duly notified, such adverse effect shall be considered as job delay, the Contractor shall be subject to payment of damages to the Owner in an amount not to exceed \$100.00 for each occurrence.

16.8 MODIFICATIONS OF ARTICLE 9. PAYMENTS AND COMPLETION

16.8.1 Delete Subparagraph 9.3.2 in its entirety and insert the following:

9.3.2 Payments on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site, or at some other location agreed upon in writing, will be made by the Owner subject to the following conditions:

9.3.2.1 Such materials or equipment shall have been fabricated or assembled specifically for the Project and delivered to storage no earlier than needed for the orderly progress of the Work as demonstrated by the Progress Schedule.

9.3.2.2 Title to such materials or equipment shall pass to the Owner pursuant to the Contractor's bill of sale which shall contain guarantee of replacement thereof in the event of damage thereto or disappearance thereof due to any cause. The Contractor shall also affirm that he will pay for such materials or equipment immediately upon receipt of payment therefor from the Owner.

9.3.2.3 In the case of offsite storage, the Contractor shall also provide consent of Surety to such payment and insurance of such materials or equipment against the perils set forth in Subparagraph 11.3.1 of the General Conditions both while storage and during transportation to the site.

9.3.2.4 Raw materials or other materials or equipment readily duplicated or usable on other projects will be paid for only after the materials are incorporated in the construction.

16.8.2 Add the following under Subparagraph to 9.4.1.

9.4.1.1 Until final completion of the entire Project, the Owner shall retain 2% of the amount due to Contractor on account of progress payments, until all Releases, Guarantees, Warranties, Record Documents, Certificates of Inspection of Governing Authorities, Maintenance Manuals, Certifications, etc., are delivered to the Architect at the end of the entire Contract.

16.8.3 Add the following under Subparagraph t 9.9.1

9.9.1.1 The Owner reserves the right to occupy any portion of the Project which is ready for occupancy prior to completion and acceptance of the Project, so long as all required governmental permits have been obtained.

9.9.1.2 The occupancy of any portion of the Project does not waive the Owner's right to liquidated damages or constitute the Owner's acceptance of any Work, as the Project will be accepted as a whole and not in units. Prior to partial occupancy, the Architect, a representative of the Owner, and the Contractor shall fully inspect the portions of the Project to be occupied, and prepare a complete list of omissions of materials, faulty workmanship, and items to be repaired, torn out, or replaced. The Owner shall assume responsibility for damage to the premises so occupied of any items not on the aforesaid list when such damage is due to greater than normal wear and tear; however, the Owner shall not assume responsibility for improper, omitted, or defective workmanship or materials.

16.9 MODIFICATIONS OF ARTICLE 11. INSURANCE AND BONDS

ARTICLE 11 – INSURANCE AND BONDS

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Delete 11.1, 11.2, 11.3, and 11.4 in their entirety and substitute the following:

Note: 1.5, Bonding, in AIA Document A20, should be retained unless the Owner wishes to use alternative wording.

11.1 - General Insurance Requirements

11.1.1 The Contractor shall not commence the Work until the Contractor has obtained, at the Contractor's own expense, all of the insurance required hereunder and such insurance has been approved by the Owner; nor shall the Contractor allow any Subcontractor to commence work on any subcontract until all insurance required of the Subcontractor has been obtained and approved by the Contractor. The Owner shall approve the insurance required of the Contractor only upon the Contractor's submission to the Owner of original certificates of insurance signed by authorized representatives of the insurers or, at the Owner's request, certified copies of the required insurance policies.

11.1.2 Insurance as required hereunder shall be in force throughout the term of the Contract and for one year after final acceptance of the Project by Owner in accordance with 11.3.1.1.iv hereof. Original certificates signed by authorized representatives of the insurers or, at the Owner's request, certified copies of insurance policies, evidencing that the required insurance is in effect, shall be maintained with the Owner throughout the term of the Contract and for one year after final acceptance of the Project by Owner.

11.1.3 During the term of the Contract, the Contractor shall require all Subcontractors to maintain Contractor commercial general liability insurance, business auto liability insurance, workers compensation insurance, and employers liability insurance, (and umbrella excess or excess liability insurance) to the same extent required of the Contractor in 11.3.1.1, 11.3.1.2 and 11.3.1.3 (and 11.3.1.4) unless any such requirement is expressly waived or amended by the Owner in writing. The Contractor shall furnish Subcontractors' certificates of insurance to the Owner immediately upon request.

11.1.4 All insurance policies required hereunder shall be endorsed to provide that the policy may not be cancelled, non-renewed or materially reduced in coverage until sixty (60) days prior written notice has been given to the Owner. Accordingly, the phrases "endeavor to" and "...but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives" are to be eliminated from the cancellation provision of standard ACORD certificates of insurance.

11.1.5 No acceptance and/or approval of any insurance by the Owner shall be construed as relieving or excusing the Contractor or the Contractor's Surety from any liability or obligation imposed upon either or both of them by the provisions of this Contract.

11.1.6 Not used.

11.1.7 All required insurance coverage must be underwritten by insurers allowed to do business in the State of New Jersey and acceptable to the Owner. The insurers must also have a policyholders' rating of "A" or better, and a financial size of "Class VII" or better in the latest evaluation by A. M. Best Company, unless Owner grants specific approval for an exception.

11.1.8 Any deductibles or retentions in excess of \$10,000 shall be disclosed by the Contractor, and are subject to Owner's written approval. Any deductible or retention amounts elected by the Contractor or imposed by the Contractor's insurer(s) shall be the sole responsibility of the Contractor.

11.1.9 Any and all return premiums and/or dividends for insurance coverage directly charged to the Owner by the Contractor in connection with this Contract shall belong to and be payable to the Owner.

11.1.10 If the Owner is damaged by the failure or neglect of the Contractor to purchase and maintain insurance as described and required herein, without so notifying the Owner, then the Contractor shall bear all costs properly attributable thereto.

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11.2 - Owner's Liability Insurance

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. In the alternative, and solely at the Owner's option, the Owner may self-insure its liability exposures.

11.3 - Contractor's Liability Insurance

11.3.1 The Contractor shall purchase and maintain the following insurance coverage to insure against claims 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 a Subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Insurance shall be written for not less than the limits specified below or required by law, whichever is greater.

11.3.1.1 Commercial general liability insurance or its equivalent for bodily injury, personal injury and property damage including loss of use, with minimum limits of:

\$1,000,000 each occurrence;
\$1,000,000 personal and advertising injury;
\$2,000,000 general aggregate per project;
\$2,000,000 products/completed operations aggregate.

This insurance shall include coverage for all of the following:

- i. General aggregate limit applying on a per project basis;
- ii. Liability arising from premises and operations;
- iii. Liability arising from the actions of independent contractors;
- iv. Liability arising from products and completed operations with such coverage to be maintained for two years after completion of the Work;
- v. Contractual liability including protection for the Contractor from bodily injury and property damage claims arising out of liability assumed under this Contract; and
- vi. Liability arising from the explosion, collapse, or underground (XCU) hazards.

11.3.1.2 Business auto liability insurance or its equivalent with a minimum limit of \$1,000,000 per accident and including coverage for all of the following:

- i. Liability arising out of the ownership, maintenance or use of any auto; and
- ii. Automobile Contractual liability.

11.3.1.3 Workers compensation insurance or its equivalent with statutory benefits as required by any state or federal law, including "other states" coverage; employers liability insurance with minimum limits of:

\$100,000 each accident for bodily injury by accident;
\$100,000 each employee for bodily injury by disease; and
\$500,000 policy limit for bodily injury by disease.

11.3.1.4 Umbrella excess liability to be purchased by the Prime Contractors and Sub-Contractors

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with minimum limits:

Contractors:

(\$5,000,000) per occurrence:

(\$5,000,000) aggregate for other than products/completed operations and auto liability and

(\$5,000,000) products/completed operations aggregate.

Sub-contractor:

(\$1,000,000) per occurrence:

(\$1,000,000) aggregated for other than products/completed operations and auto liability and

(\$1,000,000) products/completed operations aggregate

and including all of the following coverage on the applicable schedule of underlying insurance:

- i. Commercial general liability;
- ii. Business auto liability; and
- iii. Employers liability.

11.3.1.5 Owner, Union County Improvement Authority, and the County of Union, and their elected and appointed officials, officers, consultants, agents and employees (the "Insured Parties") shall be named as additional insured on the Contractors commercial general liability insured and umbrella excess or excess liability insurance policies with respect to liability arising out of the Contractors products, installation, and/or services products provided under this Contract. Such coverage shall extend to cover the additional insured for liability arising out of the following:

- i Ongoing operations;
- ii Owner's general supervision and/or services as provided by the Contractor under this Contract; and
- iii Products and completed operations.

The commercial general liability policy and the umbrella liability or excess liability policies, if required herein, must include additional insured language in i., ii. and iii. as follows:

"This policy is amended to include as insured Owner (Union County Improvement Authority), the County of Union, and their elected and appointed officials, officers, consultants, agents and employees, but only for liability arising out of "your product" or "your work" for the Union County Improvement Authority by or for you."

Special Note: ISO forms GC 2009 and CG 2010 entitled, "Additional Insured - Owners, Lessees or Contractors - Scheduled Person or Organization" (previously Forms A and B respectively) and CG 2033 entitled, "Additional Insured - Owners, Lessees or Contractors - Automatic Status When Required in Construction Agreement with You" are not acceptable. A manuscript endorsement with the above wording is required. Copy of the endorsement is to be included with all certificates of insurance.

11.3.1.6 Insurance or self-insurance provided to the Insured Parties under any Contractor's liability insurance or self-insurance required herein, including, but not limited to, umbrella or excess liability policies, shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of insurance or self-insurance. (Any cross suits or cross liability exclusion shall be deleted from Contractor's liability insurance policies required herein.)

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11.3.1.7 Insurance or self-insurance provided to the Insured Parties shall be primary, and any other insurance, self-insurance, coverage or indemnity available to the Owner and Owner's elected and appointed officials, officers, consultants, agents and employees shall be excess of and non-contributory with insurance or self-insurance provided to the Owner and Owner's elected and appointed officials, officers, consultants, agents and employees as specified herein.

11.3.1.8 Installation Floater All Risk form, on a replacement cost basis for supplies and materials until they have been inspected and approved by the Owner.

11.3.2 If any liability insurance purchased by the Contractor has been issued on a "claims made" basis, the Contractor must comply with the following additional conditions:

11.3.2.1 The Contractor shall agree to provide certificates of insurance evidencing the above coverage for a period of one year after final payment of the Contract. Such certificates shall evidence a retroactive date no later than the beginning of the Work under this Contract; or

11.3.2.2 The Contractor shall purchase, at its own expense, an extended (minimum two years) reporting period endorsement for each "claims made" policy in force as of the date of final acceptance. The Contractor shall provide evidence the purchase of an extended reporting period endorsement by means of certificate of insurance or a copy of the endorsement itself, which shall state a retroactive date no later than the beginning of the Work under this Contract.

11.3.3 Certificates of Insurance shall show the Certificate Holder as follows:

THE UNION COUNTY IMPROVEMENT AUTHORITY

1499 ROUTES 1 & 9 NORTH

RAHWAY, NEW JERSEY 07065 Certificates of Insurance that do not contain the above-stated Certificate Holder information will not be accepted by the Owner and may delay Contract approval.

INSURANCE SPECIFICATION ADDENDUM

Prior to Contractor submitting a Certificate of Insurance to the Owner, it is suggested that the Contractor check with their insurance agent to assure that the insurance company shown on their Certificate has a proper spread of risk, soundness of reinsurance, quality of assets, adequacy of loss reserves and experience of management which qualifies it to receive the A.M. Best Rate as described herein.

The insurance should be furnished by insurance companies with an "A:VII" or better as published in the most recent edition of Best Insurance Key Ratings and shall be authorized to conduct business in the State of New Jersey.

11.4 - Builders Risk Insurance (Owner to Purchase)

11.4.1 The insurance required by this Paragraph 11.4 is not intended to cover machinery, tools or equipment owned or rented by the Contractor, or its Subcontractors, which are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor and its Subcontractors, shall, at their own expense, purchase and maintain property insurance coverage for owned, leased or rented machinery, tools or equipment. The Contractor, and its Subcontractors, hereby waive all rights against the Owner and its elected and appointed officials, officers, agents, employees and consultants for property damage to or loss of use of such machinery, tools or equipment to the extent that such property damage or loss of use is covered by the Contractor's or Subcontractor's property or equipment floater insurance or other similar property insurance maintained by the Contractor or its Subcontractors. The policies shall provide such waivers of subrogation by endorsement or otherwise.

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Note: 11.5, Bonding is to be retained unless the Owner wishes to use alternative means

16.9.2 Change paragraph 11.4 Performance Bond and Payment Bond to 11.5, change subparagraph 11.4.1 to 11.5.1, change subparagraph 11.4.2 to 11.5.2

16.9.3 Add the following under Paragraph 11.5:

11.5.3 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 his power of attorney indicating the monetary limit of such power.

16.10 MODIFICATIONS OF ARTICLE 12. UNCOVERING AND CORRECTION OF WORK

16.10.1 Delete Subparagraph 12.1.1 in its entirety and insert the following:

12.1.1 If any portion of Work should be covered contrary to the instruction of the Architect or the Construction Manager, or to requirements specifically expressed in the Contract Documents, it shall, if required by the Owner, the Architect and the Construction Manager, be uncovered for observation, inspection, testing or approval, and the Work shall be replaced, as the case may be, at the Contractor's expense.

16.10.2 Add the following Subparagraph under Paragraph 12.2:

12.2.6 If, in the opinion of the Architect and the Construction Manager, the Contractor delays final completion of his work beyond a reasonable time after the Date of Substantial Completion of the Project to such extent that the period between the Date of Substantial Completion of the Project and the end of the guarantee period becomes less than eleven months, the start of the guarantee period shall be the date of the final Project Certificate of Payment in lieu of the Date of Substantial Completion of the Project.

16.11 MODIFICATIONS OF ARTICLE 13. MISCELLANEOUS PROVISIONS

16.11.1 Delete Subparagraph 13.5.1 in its entirety and insert the following:

13.5.1 The Owner, through a licensed independent testing agent and laboratory, shall conduct all tests, inspections and approvals of portions of the Work, as required by the Contract Documents and applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Except as provided in Section 13.5.1.1, and Section 15.2.1, the Owner shall bear the costs of such testing.

13.5.1.1 When Work has been installed contrary to any Contract requirement and the Contractor requests the privilege of testing in lieu of removal, such testing shall be at the Contractor's expense.

Delete Subparagraph 13.5.2. in its entirety

Subparagraph 13.5.3 becomes new Subparagraph 13.5.2.

Delete Subparagraphs 13.5.4., 13.5.5 and 13.5.6 in their entirety

16.12 MODIFICATIONS OF ARTICLE 15 CLAIMS AND DISPUTES

The following will take precedence over Article 15 CLAIMS AND DISPUTES:

- 1 General. All Claims asserted by the Contractor against the Authority shall be subject to the New Jersey Tort Claims Act, N.J.S.A. 59:1-1 et seq.
- 2 Notice of Claim. The Contractor shall file notice of its Claim on a form provided by the Authority, which form shall be completed in its entirety and signed by the Contractor. Incomplete forms will be rejected and have no effect.

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- 3 False Claims Liability. The Contractor shall be held liable and subject to all penalties and damages under the New Jersey False Claims Act. N.J.S.A. 2A:32C- I et seq., for any false or fraudulent Claim submitted to the Authority.
- 4 Review of Claims. The administrative process for review of Claims is sequential in nature and mandatory. The Authority's Claims procedure is composed of the following steps:
Step One: Review by the Authority
Step Two: Non-binding Mediation
- Completion of the two (2) steps of Claims review is a mandatory prerequisite to the initiation of litigation by either Party.
- 5 Compliance with Claim Review Procedure. Each Claim will begin its review at Step One. A Claim will not proceed to the next step unless the Contractor submits a written objection to the prior step and requests that its Claim proceeds to the next step. If at any step in the process a Claim is resolved, the Contractor must sign a full and final release as to any and all matters arising from the Claim.
- 6 Step One: The Authority's Review.
- 6.1 The Contractor must provide to the CM and the Authority the required forms as required by this Section in order to begin the Authority's administrative process for the review of Claims. The Contractor shall also submit to the Authority all documentation supporting the Contractor's Claim. The documentation provided to the Authority will serve as the basis for evaluation of the Contractor's position regarding the Claim throughout Step One of the administrative process. the Contractor shall submit additional information upon request by the Authority. No formal action will be taken by the Authority unless and until the Authority receives complete Claim documentation from the Contractor.
- 6.2 Authority Review and Decision. At the option of the Authority, a meeting may be scheduled with the Contractor, the Authority and the CM to discuss the Claim. The Authority shall render its decision regarding the Claim in writing within thirty (30) Days of the receipt of the required forms and all supporting documentation or within thirty (30) Days of any meeting with the Contractor, the Authority and the CM, whichever is later. This time limit may be extended by mutual agreement of the Parties. the Contractor, within fifteen (15) Days of the receipt of the decision by the Authority, shall accept or reject the Authority's decision in writing. If the Contractor neither accepts nor rejects in writing the Authority's decision within fifteen (15) Days, the Claim will be considered withdrawn from the administrative process and there will be no further administrative remedy available to the Contractor for the subject Claim.
- 7 Step Two: Non-Binding Mediation. If the Contractor rejects in writing the decision of the Authority, there is no further automatic administrative review of the Claim. Within fifteen (15) Days after issuance of a Certificate of Occupancy or Certificate of Acceptance for this Project, the Contractor may request in writing that any or all outstanding Claims regarding this Project, which include any or all Claims that have been processed through Step One of the Claim resolution process, and that were neither withdrawn nor considered withdrawn from the process be submitted to Step Two, non-binding mediation. Such request shall be sent to the Authority and shall specifically identify which Claim(s) are to be submitted to Step Two. Any Claim not specifically identified shall be deemed withdrawn. No Claim will proceed automatically to Step Two and the Contractor must make a specific written request that the Claim be elevated to Step Two. Step Two will not be available until after the issuance of a Certificate of Occupancy or Certificate of Acceptance, unless an earlier time for submission of the Claim to Step Two is agreed to by the Contractor and the Authority. The cost of non-binding mediation shall be shared equally by the Contractor and the Authority. The mediator shall be selected by the Authority, with the concurrence of the Contractor. The rules for the mediation shall be agreed to by the Authority, the Contractor and the mediator prior to the start of the mediation. The mediation will not proceed, however, if the Parties fail to agree on the rules for the mediation, in which case Step Two will be deemed complete.

16.12.1 Delete Paragraph 15.3.2 in its entirety and insert the following:

15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties agree otherwise, shall be conducted by a mediator chosen by the parties. The mediator shall conduct the mediation in accordance with the rules of the American Arbitration Association, unless the parties agree otherwise. A party's request for mediation shall be made in writing to the other party.

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16.12.2 Delete Paragraph 15.4 in its entirety and add the following:

15.3.4 In the event the parties are unable to mediate a Claim(s) to conclusion, either party may proceed to litigate the Claim(s) in any court of competent jurisdiction in the State of New Jersey.

END OF SUPPLEMENTARY CONDITIONS

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GENERAL SPECIFICATIONS

1. LABOR AND MATERIALS

The prices shall cover all costs of any nature incident to and growing out of the Work, including all labor, material, equipment, transportation, loss by damage or destruction of the Project, settlement of damages, and for replacement of defective work or materials. N.J.S.A. 54:32B-1 et seq. exempts all materials sold to the UCIA from sales or use taxes and should not be included in the prices provided on the Bid Form.

When applicable, The New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, as amended, and Supplemental Specifications for State Aid Projects, herein after referred to as the "Standard Specifications", are made a part of these specifications and contract for the improvements, and will govern the construction of this Project, the material used and the execution of this Project, except as revised and modified herein. The references to the foregoing specifications are given herein for the purpose of aiding in the rapid location of the description of the various items herein specified.

2. GUARANTEE AGAINST DEFECTIVE WORK

Prior to final payment being made or before the release of the Performance/Payment Bond required by Section 1.10 of the Request for Bids, the Contractor and Surety shall execute and deliver to the Owner an original Maintenance Bond with an original signature and seal having a penal sum equal to:

- A) One hundred percent (100%) of the final adjusted Contract amount, if such amount is \$50,000.00 or less;
- B) Fifty percent (50%) of the final adjusted Contract amount, if such amount be greater than \$50,000.00 but less than \$250,000.00; and,
- C) Twenty-five percent (25%) of the final adjusted contract amount, if such amount is \$250,000.00 or more.

The Bond and Surety shall be satisfactory to the UCIA. The Surety shall hold a Certificate of Authorization to do business in the State of New Jersey and shall conform to P.L. 1995 c.384, codified as N.J.S.A. 2A:44-143, 144. The Surety Disclosure Statement and Certification required by N.J.S.A. 2A: 44-143, 144, shall be attached to the Bond. Such Maintenance Bond shall remain in full force and effect for a period of one (1) year from the date of Final Completion. Such Maintenance Bond shall also provide that the Contractor and the Surety guarantee to replace for the said period of one (1) year from the date of Final Completion, all Work performed and/or all materials furnished that were not performed or were not furnished in accordance to the terms and performance requirements of the Contract Documents, and will make good any defects thereof which become apparent

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before the expiration of one (1) year. If, during that period, any part of the Project, in the judgment of the Engineer, is found defective, the Contractor will repair or replace same within five (5) days of receipt of notice from the Owner. If the Contractor refuses or neglects to do such Work in the time specified, the Owner may have the Work done by others and the Contractor or his Surety thereof will pay the cost.

The Contractor will furnish the Owner a Maintenance Bond for a percentage of the final adjusted contract price, as stated above. The one (1) year period will start the day of Final Completion of Project by the Owner. Final payment is conditional on the receipt of a maintenance bond in a form acceptable to the Owner.

3. LINES AND GRADES

Normally, horizontal and vertical control points will be provided in the technical specifications. All other surveying will be the responsibility of the Contractor unless otherwise noted.

4. PROMPT PAYMENT OF CONSTRUCTION CONTRACTS (NJ Prompt Payment Act)

Pursuant to NJSA 2A:30A-1 et. seq., payment to the Contractor, other than for Work done pursuant to a contract allowance, where applicable, shall be processed and paid as follows:

1. All contractor bills shall be either approved for payment, or notice provided as to why the bill or any portion of it will not be approved by the representative(s) of the governing body no later than the next scheduled public meeting of the UCIA following 20 calendar days of the billing date as defined in the statute.
2. If the billing is approved at such meeting, said bill shall be paid in the UCIA's subsequent payment cycle.

5. STOPPING WORK ON ACCOUNT OF BAD WEATHER

Work must only be performed in weather suitable for the type of construction planned or underway. Extremes in temperature, humidity, precipitation, evaporation, etc. can detrimentally affect the constructed product. Refer to manufacturer's product data installation requirements.

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6. ACCESS FOR OTHER CONTRACTORS

The Contractor for this Work shall give proper access to other contractors who may be employed upon the Project and must not hinder or delay unnecessarily any Work that may be progressing under other contracts.

7. REJECTED MATERIALS AND WORK

Any materials and or part of the Work that may be rejected by the Owner shall be removed and replaced by the Contractor or otherwise rectified, as may be directed by the Owner. No payment will be made upon the Work until such faulty work has been made good as may be directed. In the event the Contractor refuses or neglects to make good such faulty work, he will be deemed to have abandoned the contract and proceedings may be taken against him as provided herein.

8. SAFETY

The Contractor shall observe all rules and regulations of the federal, State, and local health officials. Attention is directed to federal, State, and local laws, rules, and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to the worker's health or safety.

The Contractor shall admit to the site, without delay and without the presentation of an inspection warrant, any inspector of OSHA or other legally responsible agency involved in safety and health administration upon presentation of proper credentials.

The Contractor shall make available to the Contractor's employees, subcontractors, the Owner, and the public, all information pursuant to OSHA 29 CFR Part 1926.59 of The Hazard Communication Standard 29 CFR 1910.1200, and shall also maintain a file on each job site containing all Material Safety Data Sheets (MSDS) for products in use at the Project. These Material Safety Data Sheets shall be made available to the Engineer upon request.

The Contractor shall at all times conduct the Work to provide for the safety and convenience of the general public and protection of persons and property. The safety provisions of applicable laws, OSHA regulations, building and construction codes, and the rules and regulations of the New Jersey Department of Labor and Commerce shall be observed.

9. MATTERS NOT MENTIONED IN CONTRACT DOCUMENTS

Any Work, material, or method, not specifically described in these specifications, but shown upon the plans of the Work, shall be carried out as shown on said plan.

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10. PERMITS

The Contractor shall obtain all necessary permits required by law and provide the Owner with necessary approvals prior to commencement of permitted Work.

11. PROGRESS PAYMENTS

In the event of any conflict between this Paragraph 11 of the General Specifications and Section 01290 – PAYMENT PROCEDURES, the latter shall control. Monthly progress payments will be made based on the value of labor and materials incorporated in the Work and of materials suitably stored at the site. An itemized schedule of values shall be submitted with each Application for Payment.

In accordance with N.J.S.A. 40A:11-16.3, Contractor agrees that Owner shall withhold 2% of the amount due on each progress payment pending completion of the contract.

All Applications for Payment shall be accompanied by paid invoices for materials incorporated in the Work and for materials suitably stored at the site, and affidavit(s) by Subcontractors whose Work was included in the next to the last application to the effect such Work and such materials have been paid for.

All Applications shall require the Certified Payroll to be uploaded to the “NJ Wage Hub” and hard copies supplied to the UCIA in support of each Payment Application submitted.

No payment shall be made without Contractor having provided all submittals set forth in this Section, and the approval of same by the Owner.

For contracts exceeding \$100,000.00, monthly payments will be made on the Work to the extent of 98% of the value of the Work done which is considered to be retainage.

For contracts less than \$100,000.00, monthly payments will be on the Work to the extent of 90% of the value of the Work done. In lieu of the retainage, the Contractor will, at his/her/its option, deposit with the Owner negotiable bearer bonds of the State of New Jersey or any political subdivision thereof, equal to the amount otherwise withheld as retainage.

When the Project is completed, the final cost of the Project will be based on actual quantities of authorized Work done under each item scheduled in the bidding sheet and approved Change Orders, if any. The money due to the Contractor as determined by said final certificate after deduction of previous monthly payments on account, will be paid to the Contractor in accordance with the terms of the contract dealing with Prompt Payment, providing, however that before such final payment is made, all outstanding claims against the Contractor must be satisfied. Before final payment is released, the Contractor must furnish: a) Maintenance Bond; b) Certification of Compliance, New Jersey Prevailing Wage Act; and

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c) General Release in a form satisfactory to Owner Counsel; d) complete set of as-

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built plans in the latest AutoCad on compact disc; and e) a complete set of in-progress photos in jpg, jpeg, or bmp digital format on a compact disc, and must comply with the Final Payment Application requirements under Section 01290, "Payment Procedures. "

12. INSPECTION

The Work must be done in accordance with the plans and specifications, and will be inspected by the Owner. An inspector may be placed upon the Work at any time by the Owner to see that the plans, specifications, and instructions of the Owner are carried out.

13. UTILITIES

Attention of the bidder is directed to the fact that the approximate locations of known utility structures and facilities that may be encountered within and adjacent to the limits of the Work are shown on the plans and described herein. The accuracy and completeness of this information is not guaranteed by the Owner and the bidder is advised to ascertain for himself all the facts concerning the location of these and other utilities.

The Contractor shall not proceed with his/her/its Work until he/she/it has made diligent inquiries of all public utility and municipal officials to determine the exact location of all underground structures and pipes within the site of the Project. The Contractor shall notify utility owners not less than ten (10) days in advance of the time he/she/it proposes to perform any Work that will endanger or affect their facilities in compliance with **New Jersey One-Call**. In excavating in any part of the Work, care must be taken not to remove or damage any gas, water, sewer, or other pipe, conduit, or structure, - public or private - without the concurrence of the Owner. The Contractor shall, at his own expense, shore up, secure and maintain a continuous flow in such structures, and will keep them in repair until final acceptance of the Work.

When pipes or other structures are encountered or when the removal, relocation or protection of these utilities are necessary in carrying out the Project as planned, the Contractor will cooperate with the owner of said utilities and will permit the owners or their agents access to the site of the Work in order to relocate or protect their facilities and not hinder or delay unnecessarily the Work of the owners in moving same. No extra allowance of payment will be made to the Contractor for the use of any materials, equipment, etc., or for the performance of any Work in connection with the moving of said structures unless the Contractor is specifically ordered by the Owner to furnish such materials, equipment, or services. If directed by the Owner to do any Work or furnish any materials or equipment, payment will be allowed the Contractor in accordance with the unit prices bid for such Work, or, if such items are not scheduled in the proposal, such Work shall be allowed "Supplemental Work" as provided in Article 7, Changes in the Work, of the General Conditions of the Contract (AIA Document A232 – 2009). The corporations, companies, agencies or municipalities owning or controlling the utilities, and the name, and telephone numbers are listed in the beginning of the Technical Specifications.

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14. MATERIAL COMPLIANCE AND SHOP DRAWINGS

The Contractor shall require the manufacturer or supplier to furnish three (3) copies of manufacturer's product data with each delivery of materials, components and manufactured items for the Project. Two (2) copies will be furnished to the Owner; one copy will be retained by the Contractor. Manufacturer's product data shall be accompanied by the following information:

1. Project to which material is consigned;
2. Name of the Contractor to which the material is supplied;
3. Kind of material supplied;
4. Quantity of material represented by the Certificate;
5. Means of identifying the consignment, such as label marking, seal number, etc.;
6. Date and method of shipment;
7. That the material is in conformity with the pertinent specifications stated in the certificate; and
8. Signature of a person having legal authority to bind the supplier.

The Contractor shall submit to the Owner for its approval five (5) copies of complete and fully detailed shop or working drawings for those work items requiring submission as identified in each of the Divisions of work within the technical specifications.

Each drawing shall identify the name of the job, location and Contractor. Contractor is referred to Section 01330, Article 2.1C, SHOP DRAWINGS, for specific requirements. In the event of a conflict between this Paragraph 14 of the General Specifications and Section 01330, Article 2.1C, the latter shall control.

All drawings will be approved in accordance with the technical specifications. Refer to the Technical Specifications for specific items.

15. PRECONSTRUCTION

In order to provide full coordination of this Project among the parties concerned, the Owner will arrange for a preconstruction meeting between the Contractor, Owner and other interested parties as soon as possible after the contract is executed. At this meeting the Contractor will present his proposed schedule of Work which shall be subject to review and approval of the Owner through its designated representatives.

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16. NEW JERSEY SALES AND USE TAX REQUIREMENTS,

Contractors are required to comply with the following:

New Jersey Sales and Use Tax Requirements: All contractors with subcontractors, or any of their affiliates, who enter into contracts for the provision of goods or services with or for New Jersey local government entities, are required to collect and remit to the New Jersey Director of Taxation in the Department of the Treasury the use tax due on all of their sales of tangible personal property delivered into the State of New Jersey pursuant to the "Sales and Use Tax Act," (NJSA 54:32B-1 et, seq.), regardless of whether the tangible personal property is intended for a contract with the contracting agency. This tax shall be remitted for the term of the Contract.

For purposes herein "affiliate" shall mean any entity that: (a) directly, indirectly, or constructively controls another entity, (b) is directly, indirectly, or constructively controlled by another entity, or (c) is subject to the control of a common entity. For purposes of the immediately preceding sentence, an entity controls another entity if it owns, directly or indirectly, more than fifty percent (50%) of the ownership interest in that entity. NJSA 52:32-44(g)(3).

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END OF GENERAL SPECIFICATIONS

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SPECIAL CONDITIONS

1. DEFINITIONS

- a) OWNER: Union County Improvement Authority (UCIA)
- b) PROJECT SITE: Gerry B. Green Plaza
200 West 2nd Street, Plainfield, New Jersey
- c) PROJECT TITLE: Gerry B. Green Plaza Alterations –
Alteration and Addition
- d) ARCHITECT: **RSC Architects**
3 University Plaza Drive
Hackensack, New Jersey 07601
Telephone: (201) 941-3040
Facsimile: (201) 941-3040
- e) EXECUTIVE DIRECTOR: Dr. Bibi Taylor
- f) INSPECTOR: An authorized representative of the UCIA Executive Director assigned to make all necessary inspections of the work performed by the Contractor.
- g) PRONOUNS: The masculine pronoun shall include the feminine and neuter and the singular shall include the plural.
- h) PERSON: Any individual, partnership, society, association, joint company, corporation, estate, receiver, trustee, assignee, referee, or capacity, whether appointed by a court or otherwise, and any combination of individuals.
- i) OR EQUAL: Whenever in the technical specifications and Plans, any particular brand, make of materials, device, or piece of equipment is shown or specified, such brand make of material or device or piece of equipment shall be regarded merely as a standard and the expression “or equal” shall apply to the same extent as if it is being written therein in full. If two or more brands, make of materials, devices, or pieces of equipment are shown as specified, each is to be regarded as the equal of the other. Any other brand, make of material, device or piece of equipment which, in the opinion of the Architect, is the recognized equal of that specified, considering quality, workmanship, economy of operation, and suitability for the purpose intended, will be accepted, subject to the submission process described at Section 01600.
- j) BIDDER: Any person who submits a Proposal upon the project described in the Invitation for Bids
- l) BID DOCUMENTS: The Bid Documents, sometimes referred to as the “plans and specifications,” shall mean and include the following:
1. Legal Documents (Notice to Bidders; Instructions to

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Bidders; Bid Forms; AIA Standard Contract; AIA General Conditions of Contract; Supplementary Conditions of the Contract; NJ Prevailing Wage Determination

2. General Specifications
3. Special Conditions
4. Division 01 General Requirements
5. Division 02 through 14; 21 through 23; 26; 28 and 31 through 33 Specifications
6. Addenda, if any
7. Plans and Drawings
8. Clarifications to Plans or Specifications

- k) **CONTRACTOR:** The person whose proposal shall be accepted by the Owner and who shall thereafter enter into a formal Contract with the Owner to furnish the materials and do the work as bid upon.
- l) **SUBCONTRACTOR:** A person supplying material, labor, equipment and appurtenances for work at the site of the project. Such person has contractual relations with the Contractor, but not with the Owner.
- m) **PRINCIPAL:** When used in the Bid Bond, the word Principal means the same as the word Bidder. When used in the Performance Bond, the word Principal means the same as the word Contractor.
- n) **SURETY:** The corporation or individual, bound by the Performance Bond, with and for the Contractor and who is primarily liable and engages to be responsible for the Contractor's acceptable performance of the Work for which the Contract has been made, and for his payment of all debts pertaining thereto.
- o) **CONTRACT** The Contract Documents DOCUMENTS shall be those documents enumerated in the Standard Form of Agreement (AIA Document A132-2019 CMA), and shall include the Bid Documents and the successful bidder's proposal:
- p) **WORK:** All the work to be performed by the Contractor in the fulfillment of the contract, including all necessary materials, labor, equipment and transportation, as described in the Contract Documents for the contemplated improvement.
- q) **SCOPE OF WORK:** The specified work, improvement or job, to which these Contract Documents apply, as described in the Contract.
- r) **PLANS:** The prints of the drawings which show the location, character, dimensions and details of the Work to be done and which are to be considered part of the Contract Documents, the same as though attached thereto.
- s) **NOTICE TO PROCEED:** The official letter from the Owner to the successful Bidder, notifying him that he has been awarded the Contract.

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t) SUBSTANTIAL COMPLETION:	Date when a certificate of occupancy or temporary certificate of occupancy is issued, allowing the building to be occupied by the owner.
u) DATE OF FINAL ACCEPTANCE:	The date the Owner accepts the completed Work and authorizes final payment therefor.

2. CORRELATION, INTENT AND INTERPRETATION OF THE CONTRACT DOCUMENTS

The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor for the benefit of the Owner. The Contract Documents are complementary, and what is required by one shall be binding as if required by all. Performance by the Contractor (and its sub-contractors, consultants, agents and those acting on the Contractor's behalf), 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, and in accordance with the priority established by Paragraph 10 of these Special Conditions. Any ambiguities in or conflicts between any of the Contract Documents shall be resolved in favor of the Owner, including, without limitation, Owner's design intent, and the rights, remedies and protections to which the Owner is entitled. In the event of a discrepancy and/or ambiguity between or among any Contract Documents, the document that provides greater rights, remedies or protections to the Owner shall govern, as determined by the Owner.

3. INTENT OF CONTRACT

The contract includes, but is not necessarily limited to, General Construction work, Masonry Work, Concrete Work, Plumbing work, HVAC work, Electrical work and Sprinkler work. All labor and equipment shall be provided as necessary to satisfactorily complete all work within the project as specified within the Contract Documents. All new systems shall be made fully operational in a first class workmanship manner and guaranteed for one year from the date of the Certificate of Occupancy. The contractor shall be responsible for investigating existing conditions on the site and shall be responsible for doing whatever is required to keep the site fully operational without any adverse impact on the existing facilities on site.

This is a lump sum contract for all work. Each **contractor** or **subcontractor** shall refer to **ALL** drawings to completely familiarize him/herself with the work.

4. NO PRODUCT OR MANUFACTURER SPECIFIED

Whenever in the Division specifications a manufacturer or product is listed, it shall mean that it includes but is not limited to such manufacturer or product

5. TEMPORARY FIELD OFFICE

The Contractor shall set up a field office on site as specified in Division 01 Section "Temporary Facilities."

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6. PROJECT COORDINATION

Throughout the project, the Contractor shall coordinate all activities with the CM as well as the UCIA staff and with department heads affected by the work taking place, in an effort to cause the least amount of disturbance to the daily operations of those departments.

7. PROJECT SITE, BUILDING LIMITATIONS AND JOB CONDITIONS

The Contractor shall cause the least amount of disruption to the operations, the facility operations, the personnel and visitors to the Project Site and existing facilities on the Project Site.

The Contractor shall be aware that the existing **Gerry B. Green Plaza Alterations** will be occupied during the entire construction period and the building in operation at all times the building will be available at a minimum of 21 consecutive days to the contractor for specific scopes of work, and Contractor shall maintain security during construction. Construction operations shall not impact in any way operations and the ability to quickly respond to emergencies. Proper security shall be coordinated with CM.

Phasing of the project must be coordinated with the **CM** as well as the Architect and Owner.

The Contractor shall schedule phasing and deliveries of materials from 7:00am-8:00am with the Building so as not to cause undue hardship to the Building Occupants or to the Building Occupant's operations and to ensure that no unsafe conditions are caused on the Project Site. Contractor shall also coordinate with the Owner for removal of demolition and construction debris, and a staging area for storage of materials.

Upon suspension of Work, at the end of the day or for protracted periods, the Contractor shall remove all rubbish and materials from the Work site to the approved storage/staging location. All road cuts, saw cuts, and trenches that may pose hazard to vehicular, pedestrian, or bicycle traffic, to include handicapped users, shall be filled to the surface of the roadway or sidewalk. At no time will steel plates or settled trenches be allowed at the daily suspension of Work, unless specifically approved by the Owner.

With respect to pedestrian traffic, the Contractor shall install signs restricting access of the general public and, as necessary, Library employees to the area of construction. The Contractor shall provide safe access to required areas and place physical barriers to restricted areas. These barriers may range from caution tape to actual barriers, at the direction of the Owner.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF FIRE ALARM WIRING AND DEVICES. TO BE COORDINATED WITH THE OWNERS FIRE ALARM VENDOR

THE CONTRACTOR SHALL COORDINATE ITS WORK AND THAT OF CONTRACTOR'S SUBCONTRACTORS AND PROVIDE ACCESS TO WORK AREAS AND ALL ELECTRICAL CONDUIT WITH PULL STRINGS AND BOXES AS REQUIRED AND IDENTIFIED ON DRAWINGS NECESSARY FOR THE INSTALLATION OF THE WORK.

8. TRAFFIC AND STREET MAINTENANCE

The Work must be started and performed by the Contractor in such a manner as to minimize delays to the traveling public, students and pedestrians. It must be completed in a timely fashion, with little or no inconvenience to traffic, students and pedestrians, where such inconvenience may be avoided.

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Should the CM deem it expedient for the best interest of the Library and Owner or for the safety of the public, the CM may concentrate the Work at specific places or may suspend the Work entirely for a period not to exceed seven (7) days, providing that, if necessary, the further suspension of the Work due to inclement weather will not be a detriment to the entire Work operation. Upon any suspension of Work, all unused materials shall be placed so as not to impede traffic and all rubbish shall be removed. Whenever a street is partially closed, the Contractor shall erect plainly worded signs announcing such fact, together with proper barricades at the nearest cross street upon each side of such obstruction and upon intersecting streets. Contractor shall also receive approval from the appropriate departments of Cranford.

All municipal, county, and state roadways shall remain open to traffic unless otherwise provided for in the technical specifications.

If modified traffic patterns are authorized in order to provide a safe working or traveling environment, the Contractor is responsible for providing all equipment, barrels, cones, signs, and barricades to implement the work zone and detours, unless otherwise specified in the technical specifications. All work zones and detours shall be established in accordance with the technical plans and specifications if provided or in strict compliance with the current version of the Manual for Uniform Traffic Control Devices (MUTCD). The Contractor shall obtain approval for these work zones and detour plans from the Municipal Police or applicable police agency and the Union County Bureau of Traffic Maintenance prior to implementation. Contractor shall pay for all required police safety officers during road construction work.

All traffic control plans shall provide for safe movement of vehicular, bicycle, and pedestrian traffic. Particular attention shall be given to requirements of the Americans with Disabilities Act.

No portion of any street or alleyway may be used for the storage of any materials or equipment without the approval of the Municipal Police or other applicable police agency. Sidewalks, gutters, drains, fire hydrants and private drives shall be maintained for their intended use unless specifically approved by the Owner.

Contractor shall coordinate the use of cranes or other hoisting equipment with Owner and local authorities so as to minimize disruptions on Project Site and adjoining streets. If use or blocking of streets is necessary, Contractor shall obtain and pay for required permits or approvals and pay all fees and police security officer/flagmen as required. Contractor shall provide all of the materials, tools, equipment and labor for cleaning the public streets, public sidewalks, roadways, alleys, driveways, etc., which are affected and/or disturbed by the Work.

Use of Traffic Control Officers shall be determined by the Owner in accordance with the provisions of N.J.S.A. 40A:11-23.1(c). If applicable to the Project, the Owner shall have provided an allowance for same as set forth in the Bid Form.

9. CONSTRUCTION SIGNS

The contractor shall install signs restricting access of the general public to the area of construction. As a minimum, they should state “**CONSTRUCTION AREA – NO ADMITTANCE**”. Restricted areas, however, shall not block public exit ways. Provide temporary signs as required where work is being phased.

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10. GUARANTEES AND WARRANTIES:

All guarantees and warranties shall start at the time a Certificate of Occupancy is issued, not at the time of start up of equipment. This applies to **ALL** equipment, systems and services of the building.

11. PRECEDENCE OF LARGE SCALE DETAILS AND DOCUMENTS

A. The general character of the detail work is shown on the drawings, but minor modifications may be made in large-scale details. Where the word "similar" occurs on the drawings, it shall be used in its general sense and not as meaning identical. All details shall be worked out in relation to their location and their connection to other parts of the work. On any drawings where a portion of the work is drawn out and the remainder is indicated in outline, the parts indicated in outline shall also apply to other like portions of the work. Where details are indicated by starting only, such details shall be continued throughout the courses or parts where it occurs and shall also apply to all other similar parts in the work unless otherwise noted. 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/Engineer before any work affected thereby has been performed.

B. Work specified but not shown on the drawings, or shown on the drawings but not specified, shall be considered as if indicated in both. In the event of conflict between various parts of the plans and specifications, the document shall take precedence in the following order: (1) for extent, sizes, quantity of work, and design intent, drawings shall govern over specifications; and (2) for quality of materials and workmanship, specifications shall govern over drawings. If there are conflicts between drawings, the Architect shall render a decision, which shall be final. The Contractor shall not increase the Contract price due to any interpretations made by the Architect.

12. THE BIDDER SHALL ALSO THOROUGHLY EXAMINE AND BECOME FAMILIAR WITH ALL BID DOCUMENTS.

The Bidder shall review all drawings for the project and not limit his/her/its bid to only work that is shown on drawings referenced for a Prime Contractor. The drawings are done so for ease of reference only and not intended to limit the work of the Contractor. If work is shown to be done on one drawing that usually requires work of another contractor or trade and is standard in the industry as such, then the contractor whose trade it is shall include the work in his/her/its bid. It is assumed to be reasonable since the contractor whose trade must do the work has reviewed and familiarized itself with the entire set of drawings and specifications, and therefore knew that it had to be furnished or hooked up and installed. Also if equipment is shown on one drawing but not shown as being hooked up on other drawings, the contractor whose trade usually does the hook up shall do so at no additional charge since he/she/it reviewed and familiarized himself/herself/itself with the entire set of drawings and therefore knew the equipment was there and it had to be hooked up. If steel work is shown on the architectural, but not on the structural, it still shall be provided since the steel subcontractor reviewed the entire set of drawings. By submitting a proposal, the Bidder covenants that he/she/it has carefully examined the **complete** set of Bid Documents, Addenda, if any, and the Site; and that from Bidder's investigation Bidder has satisfied himself/herself/itself as to the nature and location of the work, the phasing required for the work, the general and local conditions and all matters that may in any way affect the work or its performance and that as a result of such examination,

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Bidder fully understands the intent and purpose thereof, Bidder's obligations thereunder, and that Bidder will not make any claim for, or have any right to damages, because of a lack of any information.

13. CONSTRUCTION START AND DURATION

The Contractor shall begin construction within **20 Calendar Days** after Notice to Proceed by the Owner and shall complete the work in/or before ~~—~~ **260 Calendar Days**, reference Section 01100 Summary for schedule and phasing duration requirements. Failure of the Contractor to begin construction activities within 20 days for any reason not approved by the Owner shall constitute a Contractor default for which the owner may take whatever action that is deemed appropriate under the contract. The Contractor shall include within his bid all costs associated with the coordination required between the various subcontractors to meet these dates.

END OF SPECIAL CONDITIONS SECTION

DRAFT

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Work restrictions.
 - 4. Work Phasing
 - 5. Specification and Drawing conventions.
- B. Related Requirements:
 - 1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
 - 2. Division 01 Section "Execution" for coordination of Owner-installed products.

1.3 DEFINITIONS

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

1.4 PROJECT INFORMATION

- A. Project Identification: Alteration of the Gerry B. Green Building Plaza.
 - 1. Project Location: 200 West 2nd Street, Plainfield, New Jersey.
- B. Owner Representative: Pinnacle Consulting and Construction
 - 1. Representative: Bob Pasqual
One Gateway Center, Suite 2600
Newark, NJ 07102
Telephone: 973-353-6218
- C. Architect: RSC Architects LLC.
 - 1. Architect's Representative: Timothy Hennessy
3 University Plaza Drive
Hackensack, NJ 07601
Telephone: 201-941-3040

- D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Structural Engineer: Pennoni Engineering Consulting
2. Mechanical Plumbing Electrical Fire Protection Engineer: Karbon Engineering Services

1.5 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. The replacement of roof top units (RTU's). (Base Scope of Work)
 - a. The work consists of the replacement of four (4) existing RTU's and associated equipment.
 - b. The replacement of the RTU's is a critical path scope of work and all prerequisite tasks and activities shall be expedited to ensure an approach that is most beneficial to minimizing the project duration.
 - c. The RTU replacement shall be phased to be removed and replaced. RTU-1 and RTU-2 are to be replaced during a 21 day shut down and is to be coordinated with the replacement of above ceiling hvac equipment. Contractor to coordinate shut down with delivery of units and owner during the submittal phase.
 - d. All work shall be planned, coordinated and executed with all other project work to ensure full operation of the existing facilities.
2. The replacement of roofing. (Base Scope of Work)
 - a. The work consists of the replacement of approximately 24,000 SF of roof area as indicated on Roof Plan.
 - b. The roofing work will be performed in phases, all flashings and base sheets to be installed, upon completion of RTU replacements the cap sheet and final flashing work to be completed.
 - c. Removal of existing Roofing, Flashings, insulation, and related materials as indicated on the drawings for roof replacement.
 - d. Removal of single ply membrane only to be discarded, existing sound insulation to remain.
 - Removal and Replacement of all wet and/or damp insulation if present.
 - e. Mechanical attachment of Secure Rock®, ½" thick divorce board to Metal deck.
 - f. Install Isocyanurate board and ½" cover board crickets.
 - g. Torch-applied Modified (*Rolled*) built-up roofing system. White granule surface and base sheet.
 - h. Specified flashings and accessories.
3. The replacement of fan-powered boxes. (Base Scope of Work)
 - a. The work consists of the replacement of all existing fan-powered terminal boxes (FPB's).
 - b. The work includes modifications to existing ductwork to accommodate the new boxes.
 - c. The work includes the balancing of air flow of the existing diffusers.
 - d. The work includes the replacement of the existing building management system (BMS).
 - e. All work shall be planned, coordinated and executed with all other project work to ensure full operation of the existing facilities ahead of coordinated shut down. Owner will provide 21 consecutive days for the above ceiling work to be intalled, contractor is to complete the FPB's above ceiling work during this period.
 - f. Ceiling tiles and grid to be removed and replaced with new as required to install above ceiling equipment.
 - g. The FPB replacement is to be coordinated with the Alternate #3 ceiling tile replacement through out building if owner awards scope of work.
4. Interior painting. (Base Scope of Work – State Areas)
 - a. The work consists of the interior painting of all wall areas and door frames in all State occupied spaces within the building (See Architectural Floor Plans for Locations).
 - b. The existing wall base shall remain unchanged.
 - c. The work consists of the preparation of wall surfaces and frames for priming and painting as per the specifications.
 - d. Existing furniture and equipment to remain in place.
 - e. Owner will select up to 5 colors to be applied.
5. Elevator Modernization. (Alternate #1)
 - a. The work consists of the modernization of three (3) elevators including two (2) passenger elevators and one service elevator.
 - b. An Elevator Modernization Survey dated April 23, 2025 as prepared by Lerch-Bates has been provided as background information related to the elevator scope.

- c. The elevator work consists of the following.
 - 1) The replacement of the controllers.
 - 2) The replacement of the door operator and detector.
 - 3) The replacement of the selector, car, and hall fixtures.
 - 4) Modifications to the fire service modules.
 - 5) The replacement of the hoist way door rollers.
- 6. Interior painting (Alternate #2 – County and Additional Tenant Areas)
 - a. The work consists of the interior painting of all wall areas and door frames in the remaining areas of the building outside of the State occupied spaces within the building (see architectural floor plans for locations).
 - b. The existing wall base shall remain unchanged.
 - c. The work consists of the preparation of wall surfaces and frames for priming and painting as per the specifications.
 - d. Existing furniture and equipment to remain in place.
 - e. Areas excluded include stair towers, Soffits, and Tiled bathroom Areas
- 7. The replacement of suspended acoustic ceiling tiles (Alternate #3).
 - a. The work consists of the replacement of all existing suspended acoustic ceiling tiles throughout all areas of the building.
 - b. The existing ceiling grid is to remain unchanged, unless otherwise noted as part of other work scopes.
 - c. Existing Grid to be painted prior to installation of new ceiling tiles.
 - d. The ceiling tile replacement shall be coordinated with the FPB replacement.
 - e. The existing ceiling grid shall be removed at the dashed area (2'-0" perimeter) around the FPB to accommodate the replacement prior to the ceiling tile replacement.
- 8. Other Work indicated in the Contract Documents. (Base Scope of Work)
 - a. Contractor is responsible for coordination with utility companies (such as PSE&G) and shall be responsible to schedule within the project contract duration.

B. Type of Contract:

- 1. Project will be constructed under a single prime contract.

1.6 WORK PHASING

- A. The Project needs to be completed within the contract duration indicated in the special conditions section of the specifications.
- B. The contractor shall provide a schedule for the sequencing of the work in a manner that maintenance full operation and condition of the building during the work
- C. The Owner will coordinate a (21) day duration when the office spaces can be vacated to perform work that would be disruptive to the working office environment.
- D. It will be the contractor's responsibility to coordinate all work scopes and man power to complete the work accordingly. A schedule of all work items shall be submitted to the owner's representative for full acceptance prior to execution.
- E. The phasing of the work shall be carefully planned and executed to ensure a seamless transition between the removal of existing elements and the installation of new components. This approach will minimize disruptions, safeguard newly completed construction from damage, and maintain a controlled environment for efficient progress.
- F. Protective measures, such as temporary barriers and sequencing strategies, will be implemented to prevent interference with fresh installations. Additionally, coordination between trades and adherence to a detailed schedule will ensure that each phase progresses smoothly, reducing the risk of delays or complications.
- G. The following work is to be coordinated during a 21 consecutive day shut down coordinated with delivery of RTU #1 and #2:
 - Above ceiling installation of FPB's,
 - Interior Painting and Ceiling Replacement
 - Removal and Installation of RTU #1 and #2
 - All associated work for the above listed items to be completed as well

ANY WORK THAT DOES NOT IMPACT BUILDING OPERATIONS SUCH AS THE ROOF REPLACEMENT MAY BE SEQUENCED TO SUPPORT EARLIER COMPLETION OF THE PROJECT BUT MUST BE REVIEWED AND APPROVED BY THE OWNERS REPRESENTATIVE.

- H. The liquidated damages shall also be applied to the (21) day shutdown of the office spaces. If the work is not completed and the office spaces cannot be occupied. Section 1.32 Liquidated Damages further outlines the

responsibilities of the contractor.

1.7 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. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet of entrances, operable windows, or outdoor-air intakes.
- C. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.8 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. 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.
 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
- C. Related Requirements:
 - 1. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for field testing by an independent testing agency.
- D. The work included in any accepted allowance is to be completed within the original activity milestone dates stated in these documents, as accepted at time of award. No additional time will be awarded to the Contractor as the result of an allowance being utilized.

1.3 DEFINITIONS

- A. Allowance is a quantity of work or dollar amount 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.
- B. It is to be clearly understood that the Allowances are to be used for work beyond the Contractor's base scope of work and at the sole option of the Owner. It is the Contractor's responsibility to perform all work required to comply with the requirements of the Contract Documents and to deliver a complete project without the use of any allowances.

1.4 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.

1.5 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.6 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.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
 - 3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
 - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 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.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Owner's contingency allowance of \$300,000.00.

END OF SECTION 012100

SECTION 012300 – ALTERNATES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other work of the Contract.
- C. Schedule: A schedule of alternates is included at the end of this Section. Alternates shall be added or deducted by the Owner to / from the Grand Total Base Bid amount in the numerical order as listed below.
- D. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Add Alternate No. 1: Elevator Modernization
 - 1. Base Bid: Existing Elevator equipment and Controls to remain.
 - 2. Alternate: Existing Elevators and Controls to be modernized per Construction Documents, see Project Summary for outline of work.
- B. Add Alternate No. 2: Interior Painting
 - 1. Base Bid: Painting of all state occupied offices.
 - 2. Alternate: Paint all teanant and common areas per Construction Documents, see Project Summary for outline of work.
- C. Add Alternate No. 3: Ceiling Tile Replacement
 - 1. Base Bid: Replace grid and ceiling tiles as required to install new above ceiling HVAC equipment.
 - 2. Alternate: Replace all ceiling tiles not already included in the base scope of work throughout the building. Additionally the ceiling grid is to be painted after removal of all grids prior to installing new ceiling tiles.

END OF SECTION 012300

SECTION 012500 – “OR EQUAL” SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the acceptance of “Or Equal” substitutions.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 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.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: See this section
 - 2. Documentation: Show compliance with all specified requirements for “Or Equal” substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution 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.
 - f. Certificates and qualification data.

- g. List of similar installations for completed projects with project names and addresses and names and addresses of architects.
 - 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 current IBCNJ.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitution 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.
 - 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.
4. Architect or his consultant will evaluate and render only one (1) decision on any "Or Equal" Substitution. Re-evaluation of any "Or Equal" Substitution will be paid for by the Contractor at a rate of \$155.00 dollars an hour for reimbursement to the Architect.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. If a product or material requires testing to evidence that it is an equivalent, engage a qualified testing agency to perform compatibility tests recommended by Architect.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

PART 2 - PRODUCTS

2.1 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. The contractor is responsible for all system accessories and required components necessary for the installation of requested “or equals” or substitutions.
 - c. Requested substitution provides sustainable design characteristics that specified product provided for achieving sustainable design prerequisites and credits.
 - 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.
2. Additional Responsibilities: Contractor shall be responsible to compensate the Owner for Architect redesign and evaluation services, increased cost of other construction by Owner, and similar considerations due to Contractor's requests for substitution.
- B. “Or Equal” Substitutions: Architect will consider requests for substitution if received within 21 days after the Notice of Contract Award. Requests received after the 21 days will be rejected by the 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 is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided for achieving sustainable design prerequisites and credits.
 - c. Substitution request is fully documented and properly submitted. 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.

PART 3 - COMPENSATION (Not used)

END OF SECTION 012500

PROJECT NAME: _____
RSC PROJECT #: _____
CONTRACT NO. _____
SUBSTITUTION NO. _____

REQUEST FOR SUBSTITUTION / “OR EQUAL”

Submit a copy of this form for each requested substitution within 21 days after Notice of Contract Award. Fill in all blanks, check all boxes that apply and attach all necessary supporting data.

Specified Item: _____
Specification Section(s)/Paragraph(s): _____
Drawing Number(s): _____
Proposed Substitute: _____
(include, as applicable, manufacturer’s name & address, trade name & model number of product and name of fabricator or supplier)
Reason for Proposed Substitution: _____

Net Change to Contract Sum: ☐ No Change ☐ Deduct \$ _____ ☐ Add \$ _____

Change to Contract Time: ☐ No Change ☐ _____ Days ☐

The following required supporting documents are attached (Check all that apply):

- ☐ Complete Product Data
- ☐ Detailed Itemized comparison of all properties of proposed product vs. the specified product. All information required is the responsibility of the contractor.
- ☐ List of other projects on which proposed has been used, with project name, design professionals name and owner contact.
- ☐ List of maintenance services and replacement materials available.
- ☐ Statement of effect of substitution on construction schedule.
- ☐ Description of change that will be required in other work or products if substitute product is approved.

FOR SUBSTITUTION REQUEST

The undersigned testifies that he/she:

- Is submitting this substitution request within the limits set forth in the Contract Documents.
- Has investigated the proposed product and determined that it is equal or better than the specified product.
- Will provide the same warranty for the proposed product as for the specified product.
- Will coordinate installation and make other changes as required for the work to be complete in all respects, including: (a) redesign and (b) additional components and capacity required by other work affected by the change.
- Waives all claims for additional costs for evaluation of the substitution request, redesign if required, and reapproval by authorities having jurisdiction, if required.
- Will reimburse the Architect for additional costs for evaluation of the substitution request, redesign if required, and reapproval by authorities having jurisdiction, if required.

Contractor's Signature: _____

Typed or Printed Name: _____

Title: _____

Company: _____

Address: _____

Phone Number: _____

Owner Approval: _____ Date: _____

RSC Architects Approval: _____ Date: _____

Consulting Engineer Approval: _____ Date: _____

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 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, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Work Changes Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect 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.

1.6 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect 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. Proposal Requests issued by Architect 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.
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 Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
- C. Contractor Fee: The maximum Contractor's fee and other charges related to approved change orders is as follows:
1. Work performed by the Contractors subcontractors: 10% of the cost of the work for the Subcontractor and 5% of that cost (subcontractor plus 10%) for the Contractor.
 2. Work performed by the Contractor: 15% of the cost of the work for the Contractor.
 3. Insurance cost shall be at the percentage included in the approved schedule of values.
 4. Bond Cost shall be at the percentage included in the approved schedule of values.
 5. When changed work is funded through base bid Contract Allowances, there shall be no payment for insurance and bond cost as they are included in the base bid amount.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 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.

1.4 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 other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than 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 and relevant Attachments.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Contractor's name and address.
 - d. Date of submittal.

2. Arrange schedule of values consistent with format of AIA Document G703.
3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Description of the Work.
 - b. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
6. Schedule Updating: Update and resubmit the schedule before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.5 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 paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
 2. Payment will be made based on the percentage completed of the phase contract amount plus allowable reimbursable expenses per the schedule submitted.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 1. A Middlesex College Claim Voucher and itemized invoice shall be submitted monthly to the Middlesex College Project Manager for review, no later than the second (2nd) Wednesday of the month. Final approval by MC's Board of Trustees, who usually meet on the fourth (4th) Wednesday of each month, will be required prior to the release of the payment
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
 1. In addition to the AIA G702 and AIA G703 documents, submit the Middlesex College Claim Voucher.
- D. 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.
- E. **Stored Materials:** At the sole option of the Owner, payments may be made for materials stored off site. If this billing is permitted, include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored on-site, but not yet installed.
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.
- F. **Transmittal:** Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. **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.
- H. **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.
- I. **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.

2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. 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. AIA Document G706A, "Contractor's Affidavit of Release of Liens."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Administrative and supervisory personnel.
 - 3. Coordination drawings.
 - 4. Requests for Information (RFIs).
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Sections:
 - 1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

- A. RFI: Request from Owner's Representative, Architect, or Contractor seeking information from each other during construction.

1.4 COORDINATION

- 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.
 - 1. 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.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later 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's Representative 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 and activities of other contractors 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. Progress meetings.
 - 5. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 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 Representative property.

1.5 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, 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 demolition coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Provide a plan that shows the project site logistics including staging and work areas, traffic routes, crane access, contract limits, entry/exit points, contractor parking, temporary fencing, signage, phasing, etc.
 - c. Coordinate the addition of trade-specific information to the demolition coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
- B. Coordination Digital Data Files: Prepare coordination digital data files in accordance with the following requirements:
 - 1. File Preparation Format: Same digital data software program, version, and operating system as the original Drawings.
 - 2. File Preparation Format: DWG, Version AutoCad, operating in Microsoft Windows operating system.

3. File Submittal Format: Submit or post coordination drawing files using format same as file preparation format and Portable Data File (PDF) format.

1.6 KEY PERSONNEL

- A. Key Personnel Names: Within twenty (20) days of starting construction operations, 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 and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.7 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Project number.
 3. Date.
 4. Name of Contractor.
 5. Name of Architect.
 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 solution(s) 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. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 1. The following RFIs will be returned without action:

- a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. 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 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 Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within five (5) days of receipt of the RFI response.
- D. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within five (5) days if Contractor disagrees with response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Use software log to keep track of RFI's is required. Include the following: [Software log with not less than the following:]
 1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

- A. General: Contractor will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, and Architect, within four (4) days of the meeting.
- B. Preconstruction Conference: Contractor will schedule and conduct, a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than fifteen (15) days after execution of the Agreement.
 1. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

- C. Project Closeout Conference: Contractor will schedule and conduct a Project closeout conference, at a time convenient to Owner's Representative and Architect, but no later than ninety (90) 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, 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. Requirements for demonstration and training.
 - d. Preparation of Contractor's punch list.
 - e. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - f. Submittal procedures.
 - g. Responsibility for removing temporary facilities and controls.
 4. Minutes: Entity conducting meeting will record and distribute meeting minutes.
- D. Progress Meetings: Contractor will conduct progress meetings at bi-monthly interval.
1. Coordinate dates of meetings with preparation of payment requests.
 2. 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.
 3. 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: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Start-up construction schedule.
 - 2. Contractor's construction schedule.
 - 3. Daily construction reports.
 - 4. Material location reports.
 - 5. Field condition reports.
 - 6. Special reports.

1.3 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 Activity: An activity on the critical path that 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.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
 - 1. PDF electronic file.
- B. Start-up construction schedule.
- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
- D. Daily Construction Reports: Submit at weekly intervals.

- E. Field Condition Reports: Submit at time of discovery of differing conditions.
- F. Special Reports: Submit at time of unusual event.

1.5 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Completion 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 each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. 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 submittal schedule.
 - 2. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 - 3. Punch List and Final Completion: Include not more than 30 days for punch list and final completion.
- C. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed and Substantial, with Punchlist and Final Completion.
- D. Recovery Schedule: When periodic update indicates the Work is fourteen (14) or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.

2.2 START-UP CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit start-up horizontal bar-chart-type construction schedule within 14 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 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's construction schedule within 30 days of date established for issuance of permits. Base schedule on the start-up construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in ten (10) percent increments within time bar.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 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, including presence of rain or snow.
 - 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. Substantial Completions authorized.
- B. 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. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 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 final completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Architect, Owner's Representative, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and 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

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Monthly photographs.
 - 3. Final completion photographs.
- B. Related Sections:
 - 1. Division 01 Section "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.

1.3 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For photographer and Web-based photographic documentation service provider.
- B. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- C. Digital Photographs: Submit image files within three (3) days of taking photographs.
 - 1. Digital Camera: Minimum sensor resolution of eight (8) megapixels.
 - 2. Format: Minimum 1600 by 1200 pixels, 400 dpi minimum, 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. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.
- D. Demolition Construction Photographs: Submit two (2) prints of each photographic view within seven (7) days of taking photographs.

1. Format: 8-by-10-inch smooth-surface matte prints on single-weight commercial-grade photographic paper, [mounted on linen or card stock to allow a 1-inch- wide margin and enclosed back to back in clear plastic sleeves that are punched for standard three-ring binder.
2. Identification: On back of each print, provide an applied label or rubber-stamped impression with the following information:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect
 - d. Name of Contractor.
 - e. Date photograph was taken if not date stamped by camera.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.4 COORDINATION

- A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs.

1.5 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 - PRODUCTS (NOT REQUIRED)

PART 3 - EXECUTION

3.1 DEMOLITION PHOTOGRAPHS

- A. Pre-demolition 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 the Architect.
 1. Take twenty-five [25] photographs to show existing conditions adjacent to property before starting the Work.
 2. Take twenty-five [25] photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
- B. Periodic Photographs: Take twenty-five [25] photographs monthly, with the cutoff date associated with each Application for Payment. Select vantage points to show status of work and progress since last photographs were taken.
- C. Final Completion Photographs: Take fifty [50] color photographs after date of Substantial Completion for submission as project record documents. Architect will inform photographer of desired vantage points.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section Includes:

- 1. Submittal schedule requirements.
 - 2. Administrative and procedural requirements for submittals.

- B. Related Requirements:

- 1. Division 01 Section "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
 - 2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
 - 3. Division 01 Section "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
 - 4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect'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 responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 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 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. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. 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.
4. 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 final release or approval.
 - g. Scheduled dates for purchasing.
 - h. Scheduled date of fabrication.
 - i. Scheduled dates for installation.
 - j. Activity or event number.

1.1 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
 1. Project name.
 2. Date.
 3. Name of Architect.
 4. Name of Contractor.
 5. Name of firm or entity that prepared submittal.
 6. Names of subcontractor, manufacturer, and supplier.
 7. Category and type of submittal.
 8. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
 9. Drawing number and detail references, as appropriate.
- 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 on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.2 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.

- a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
- 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 reserves 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 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 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect 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 10 days for review of each resubmittal.
- 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 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 action stamp.

1.3 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.
 - 4. 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.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Notation of coordination requirements.
 - c. Relationship and attachment to adjoining construction clearly indicated.
 - d. Seal and signature of professional engineer if specified.
- 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 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 one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. 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.
- D. 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.
- E. 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.

F. Test and Research Reports:

1. 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.
2. 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.
3. 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.

1.4 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 file 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.

1.5 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.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. 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 will not review submittals received from Contractor that do not have Contractor's review and approval.

1.6 ARCHITECT'S REVIEW

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
 - 1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.
- B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect 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.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will return without review or discard submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.
- G. Continued submission of revised rejected submittals is not allowed. Architect will review a maximum of two re-submittals of a previously rejected submittal. Additional submission will require compensation to Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting 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 -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections:
 - 1. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

1.3 DEFINITIONS

- A. 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.
- B. 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. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- D. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- E. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

- F. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of 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.

1.4 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be 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.

1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems.
 - 1. Seismic-force resisting system, designated seismic system, or component listed in the designated seismic system quality assurance plan prepared by the Architect.
 - 2. Main wind-force resisting system or a wind-resisting component listed in the wind-force-resisting system quality assurance plan prepared by the Architect.
- C. 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.
- D. 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.

1.6 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, and telephone number 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 inspecting.
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. Permits, Licenses, and Certificates: For Owner's records, 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.

1.7 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- C. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
 3. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, 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.

1.8 QUALITY CONTROL

- A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.

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. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting 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 inspecting 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.
- B. 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.
- C. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location 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 any duties of Contractor.
- D. Associated Services: Cooperate with agencies 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 inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Retain first subparagraph below if required or is not common practice in Project vicinity.
 6. Delivery of samples to testing agencies.
 7. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 8. Security and protection for samples and for testing and inspecting equipment at Project site.
- E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

- F. 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 the Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses. .
1. Distribution: Distribute schedule to Owner, Architect testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. 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 modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, 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 Division 01 Section "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

1.1 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.

1.2 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. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- F. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- G. "Provide": Furnish and install, complete and ready for the intended use.
- H. "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.

1.3 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Sections:
 - 1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Water Service from Existing System: Provide connections and extensions of services as required for construction operations.
 - 1. Pay water-service use charges for water used by all entities for construction operations.
- C. Electric Power Service from Existing System: Provide connections and extensions of services as required for construction operations.
 - 1. Pay electric-power-service use charges for electricity used by all entities for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch , 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts.
- B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete bases for supporting posts.

2.2 TEMPORARY FACILITIES

- A. Definition: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Field Office: The Contractor shall provide and maintain in good condition (1) one field office
- C. Availability: Make the field office and its facilities available to the Architect, the Owner and other Prime Contractors throughout the entire construction period. One (1) complete set of Contract Documents including Addenda and Change Orders shall be kept in the field office at all times.
- D. Additional Field Offices: The General Contractor shall provide a separate trailer or shed for use of his workmen, or the storage of tools and materials.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

PART 3 - EXECUTION

3.1 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.

3.2 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. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- D. Electric Power Service: Connect to Owner's existing electric power service. Maintain equipment in a condition acceptable to Owner.
- E. Data Service: Computer and phone lines can be provided to site trailers by the Owner, but the costs for such installations and monthly usage costs must be reimbursed to the Owner.
- F. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - 2. Install lighting for Project identification sign.

3.3 SUPPORT FACILITIES INSTALLATION

- A. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- B. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
- C. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
 - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
 - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
- D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.
- E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control:
 - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant- protection zones.
 - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from the project site during the course of the project.
 - 4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- C. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
- F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- 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 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. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 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. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.
- 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 Contractor. Owner reserves right to take possession of Project identification signs.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 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.

1.2 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 and special warranties.
- B. Related Requirements:
 - 1. Division 01 Section "References" for applicable industry standards for products specified.
 - 2. Division 01 Section "Closeout Procedures" for submitting warranties.

1.3 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.
- 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," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of 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.
- D. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Division 01 Section "Submittal Procedures."

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved equal products.

1.6 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.
 - 8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

PART 2 - PRODUCTS

2.1 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. Where products are accompanied by the term "as selected," Architect will make selection.
4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
5. Or Equal: For products specified by name and accompanied by the terms "or equal," "or approved equal," or "or approved," comply with requirements in "Or Equal" 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 an equal product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Or Equal" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Sustainable Product Selection: Where Specifications require product to meet sustainable product characteristics, select products complying with indicated requirements. Comply with requirements in Division 01 sustainability requirements Section and individual Specification Sections.

1. Select products for which sustainable design documentation submittals are available from manufacturer.

2.2 "OR EQUAL" PRODUCTS

- A. Conditions for Consideration of "Or Equal" Products: Architect will consider Contractor's request for an 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 equivalent 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. Contractors detailed evaluation of significant qualities of proposed equivalent 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 equivalent 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 of proposed equivalent product, if requested.
- B. Architect's Action on "Or Equal" Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Division 01 Section "Submittal Procedures."
1. Form of Approval of Submittal: As specified in Division 01 Section "Submittal Procedures."
 2. Use product specified if Architect does not issue a decision on use of a proposed equivalent product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of a proposed equivalent 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

1.1 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.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Field engineering and surveying.
 - 2. Demolition work.

1.3 INFORMATIONAL SUBMITTALS

- A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- B. Final Property Survey: Submit 10 copies showing the Work performed and record survey data.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Prior to performing any excavation work, the contractor shall call for a utility mark out and notify the Owner's Project Manager.
- 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.

- C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. 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. Public utilities will be marked out by the appropriate utility and the Owner's personnel will mark out the College utilities.
- B. 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.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 DEMOLITION 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. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels.
- E. 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.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

- B. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 PROGRESS CLEANING

- A. General: 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. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- D. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 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.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:

- 1. Recycling nonhazardous and construction waste.

- B. Related Requirements:

N/A

1.3 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. 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.
- C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.6 INFORMATIONAL SUBMITTALS

- B. Owner requires a legible copy of weight tickets/receipts for recyclable materials (concrete, asphalt, metals, wood, gypsum, brick, insulation etc.). Whenever possible, Owner prefers materials which are scheduled for demolition, to be recycled.

1.7 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS

1.1 RECYCLING CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. 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.
- C. 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. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

1.2 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.
- C. Paint: Seal containers and store by type.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 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.

1.2 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.
- B. Related Requirements:
 - 1. Division 01 Section "Photographic Documentation" for submitting final completion construction photographic documentation.
 - 2. Division 01 Section "Execution" for progress cleaning of Project site.

1.3 ACTION SUBMITTALS

- A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- B. Certified List of Incomplete Items: Final submittal at Final Completion.

1.4 CLOSEOUT SUBMITTALS

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.

1.5 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 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.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 1. Participate with Owner's representative in conducting inspection and walkthrough.
 2. Complete final cleaning requirements.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion 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 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.

1.6 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 according to Division 01 Section "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.
- 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 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. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- 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. Use CSI Form 14.1A.
 1. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.

2. Submit list of incomplete items in the following format:
 - a. MS Excel electronic file. Architect will return annotated file.
 - b. Three paper copies.

PART 2 - PRODUCTS (NOT REQUIRED)

PART 3 - EXECUTION

3.1 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.
 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, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, 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 neither planted nor 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.
- B. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 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.

1.2 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. Systems and equipment operation manuals.
 - 3. Systems and equipment maintenance manuals.
 - 4. Product maintenance manuals.
- B. Related Requirements:
 - 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 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.

1.4 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. 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. Enable reviewer comments on draft submittals.
 - 2. Submit three sets of Operation and Maintenance manuals, bound in 3-ring binders, for all equipment and products installed in the project for Owner.
- C. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 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.

1.6 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 contact information for Contractor.
- 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.
- 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."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 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. Operating procedures.
 3. Wiring diagrams.
 4. Control diagrams.
- 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. Engineering data and tests.
 6. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
 1. Startup procedures.
 2. Routine and normal operating instructions.
 3. Instructions on stopping.
- 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.

1.9 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. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 4. Aligning, adjusting, and checking instructions.
- 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. 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. Schedule for routine cleaning and maintenance.
 - 4. 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

1.1 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.

1.2 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.
- B. Related Requirements:
 - 1. Division 01 Section "Execution" for final property survey.
 - 2. Division 01 Section "Closeout Procedures" for general closeout procedures.
 - 3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set(s) of marked-up record prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Final Submittal:
 - 1) Submit PDF electronic files of scanned Record Prints and three set(s) of file prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.
- C. Record Documents:
 - 1. Maintenance Bond
 - 2. AIA document G706 - Contractor's Affidavit of Payment of Debts and Claims
 - 3. AIA document G706A - Contractor's Affidavit of Release of Liens
 - 4. AIA document G707 - Consent of Surety to Final Payment
 - 5. Manufacturer's warranties
 - 6. Certified payroll reports
 - 7. Final monthly project manning report

1.4 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. Duct size and routing.
 - h. Changes made by Change Order or Change Directive.
 - i. Details not on the original Contract Drawings.
 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. 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 and Auto CAD files as follows:
 - a. Provide a complete set of updated as-built mylar drawings.
 - b. Provide an electronic copy of the drawings in AutoCAD 2014, including title blocks, names, and logos. It may be restricted by the consultant to prevent revisions.
 - 1) This shall be used by owner for its record archives and for printing additional copies as required.
 - c. Provide a second electronic copy of the drawings in AutoCAD 2014. It may be provided with the consultants' name, title block, logo, and other such information removed in order to protect the consultant from future liability due to drawing revisions by others.
 - 1) This shall be provided with unlocked layers, including all "X-REF's" in a format that will allow owner to make revisions in order to update facility drawings.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.

- b. Date.
- c. Designation "PROJECT RECORD DRAWINGS."
- d. Name of Architect.
- e. Name of Contractor.

1.5 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. Note related Change Orders and Record Drawings where applicable.
- B. Format: Submit record specifications as annotated PDF electronic file, paper copy or scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.6 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, Record Specifications, and Record Drawings where applicable.
- C. Format: Submit Record Product Data as annotated PDF electronic file, paper copy or scanned PDF electronic file(s) of marked-up paper copy of Product Data.
 - 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

**SECTION 019113
GENERAL COMMISSIONING REQUIREMENTS**

PART 1 GENERAL

1.01 SUMMARY

- A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:
 - 1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.
 - 2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Provider are utilized to achieve this.
- B. The Commissioning Provider directs and coordinates all commissioning activities; this section describes some but not all of the Commissioning Provider's responsibilities.
- C. The Commissioning Provider is employed by Owner.

1.02 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
- B. HVAC System, including:
 - 1. Major and minor equipment items.
 - 2. Terminal units.
 - 3. Control system.
- C. Electrical Systems:
 - 1. Power quality.
- D. Electronic Safety and Security:
 - 1. Fire and smoke alarms.
- E. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

1.03 RELATED REQUIREMENTS

- A. Section 017800 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.
- B. Section 230800 - Commissioning of HVAC / Mechanical: Fuel Oil system testing; other requirements.
- C. Section 26 05 543 Commissioning of Electrical: Electrical system commissioning requirements.

1.04 QUALITY ASSURANCE

- A. A. Instructor Qualifications: Factory-authorized service representatives, experienced in training, operation, and maintenance procedures for installed systems, subsystems, and equipment.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments will NOT

become the property of Owner unless noted otherwise in individual specification sections.

1. Special testing equipment, tools and instruments are listed in each functional test procedure.
 2. All required load banks and cabling must be available.
 - a. Must be of the correct load bank size (kW), voltage, discharge type and must have cable of sufficient size and length.
- C. Dataloggers: Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment.
1. Dataloggers required to for Functional Tests will be provided by the Commissioning Provider and will not become the property of Owner.

PART 3 EXECUTION

3.01 COMMISSIONING PLAN

- A. Commissioning Provider has prepared the Commissioning Plan.
1. Attend meetings called by the Commissioning Provider for purposes of completing the commissioning plan.
 2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.
- B. Contractor is responsible for compliance with the Commissioning Plan.
- C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.
- D. Commissioning Schedule:
1. Submit anticipated dates of startup of each item of equipment and system to Commissioning Provider within 60 days after award of Contract.
 2. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
 3. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.
 4. Provide sufficient notice to Commissioning Provider for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

3.02 STARTUP PLANS AND REPORTS

- A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.
- B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.
- C. Submit directly to the Commissioning Provider.

3.03 PREFUNCTIONAL CHECKLISTS

- A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.
1. No sampling of identical or near-identical items is allowed.
 2. These checklists do not replace manufacturers' recommended startup checklists, regardless of apparent redundancy.
 3. Prefunctional Checklist forms will not be complete until after award of the contract; the following types of information will be gathered via the completed Checklist forms:
 - a. Certification by installing contractor that the unit is properly installed, started up, and operating and ready for Functional Testing.
 - b. Confirmation of receipt of each shop drawing and commissioning submittal specified, itemized by unit.
 - c. Manufacturer, model number, and relevant capacity information; list information "as specified," "as submitted," and "as installed."
 - d. Serial number of installed unit.

- e. List of inspections to be conducted to document proper installation prior to startup and Functional Testing; these will be primarily static inspections and procedures; for equipment and systems may include normal manufacturer's start-up checklist items and minor testing.
 - f. Sensor and actuator calibration information.
- B. Contractor is responsible for filling out Prefunctional Checklists, after completion of installation and before startup; witnessing by the Commissioning Provider is not required unless otherwise specified.
- 1. Each line item without deficiency is to be witnessed, initialed, and dated by the actual witness; checklists are not complete until all line items are initialed and dated complete without deficiencies.
 - 2. Checklists with incomplete items may be submitted for approval provided the Contractor attests that incomplete items do not preclude the performance of safe and reliable Functional Testing; re-submission of the Checklist is required upon completion of remaining items.
 - 3. Individual Checklists may contain line items that are the responsibility of more than one installer; Contractor shall assign responsibility to appropriate installers or subcontractors, with identification recorded on the form.
 - 4. If any Checklist line item is not relevant, record reasons on the form.
 - 5. Contractor may independently perform startup inspections and/or tests, at Contractor's option.
 - 6. Regardless of these reporting requirements, Contractor is responsible for correct startup and operation.
 - 7. Submit completed Checklists to Commissioning Provider within two days of completion.
- C. Commissioning Provider is responsible for furnishing the Prefunctional Checklists to Contractor.
- 1. Provide all additional information requested by Commissioning Provider to aid in preparation of checklists, such as shop drawing submittals, manufacturers' startup checklists, and O&M data.
 - 2. Commissioning Provider may add any relevant items deemed necessary regardless of whether they are explicitly mentioned in Contract Documents or not.
 - 3. When asked to review the proposed Checklists, do so in a timely manner.
- D. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.
- 1. If difficulty in correction would delay progress, report deficiency to the Commissioning Provider immediately.

3.04 FUNCTIONAL TESTS

- A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.
- B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.
- C. Commissioning Provider is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.
- D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Provider will document the deficiency and the Contractor's stated intentions regarding correction.
- 1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents or does not perform properly.
 - 2. The Commissioning Provider documents deficiencies on the Completion Log with copies submitted to Owner and Contractor.

3. When the deficiency has been corrected, the Contractor updates the Log certifying that the item is ready to be re-tested and returns the form to the Commissioning Provider; the Commissioning Provider will reschedule the test and the Contractor shall re-test.
 4. Contractor shall bear the cost of Owner and Commissioning Provider personnel time and expenses witnessing re-testing.
 5. Contractor shall bear the cost of Owner and Commissioning Provider personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests.
- E. Functional Test Procedures:
1. Some test procedures are included in Contract Documents; where Functional Test procedures are not included in Contract Documents, test procedures will be determined by the Commissioning Provider with input by and coordination with Contractor.
 2. Examples of Functional Testing:
 - a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).
 - b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
 - c. Systems are run through all the control system's sequences of operation and components are verified to be responding as the sequence's state.
- F. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.
- G. Factory Tests: Contractor is responsible for coordinating testing of equipment at the factory by factory personnel, to ensure compliance with commissioning requirements.
- H. Field Tests By Others: Where Functional Tests are indicated as to be performed by others not subject to Contract Documents, those tests are not subject to these commissioning requirements.

3.05 SENSOR AND ACTUATOR CALIBRATION

- A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.
- B. Calibrate using the methods described below; alternate methods may be used, if approved by Commissioning Provider and Owner beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate and final results.
- C. All Sensors:
 1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
 2. Verify that sensors with shielded cable are grounded only at one end.
- D. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:
 1. Watthour, Voltage, Amperage: 1 percent of design.
 2. Pressure, Air, Water, Gas: 3 percent of design.
 3. Natural Gas and Oil Flow Rate: 1 percent of design.

- E. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

3.06 CONTRACTOR TESTS

- A. Subcontractor/Installers shall forward to the CxA through the Contractor a list and schedule of specified contractor tests. This includes NETA testing, pressure tests, TAB, etc.
- B. Unless required otherwise, provide a minimum of 48 hour notice to the CxA for scheduled performance of each specified Contractor's test.
- C. Submit Contractors' test reports to the CxA and Architect within one week of the successful completion of each test.

3.07 FUNCTIONAL TEST PROCEDURES - GENERAL

- A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
- B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.
- C. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the "observation").
- D. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.
- E. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.
- F. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 degrees F to 75 degrees F to verify economizer operation.
- G. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.
- H. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
 - 1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Provider's request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
 - 2. Other points will be monitored by the Commissioning Provider using dataloggers.
 - 3. At the option of the Commissioning Provider, some control system monitoring may be replaced with datalogger monitoring.
 - 4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
 - 5. Graphical output is desirable and is required for all output if the system can produce it.
 - 6. Monitoring may be used to augment manual testing.

3.08 OPERATION AND MAINTENANCE MANUALS

- A. See Section 017800 - Closeout Submittals for additional requirements.
- B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.

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- C. Submit manuals related to items that were commissioned to Commissioning Provider for review; make changes recommended by Commissioning Provider.

END OF SECTION

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
- B. Related Requirements:
 - 1. Division 01 Section "Execution" for cutting and patching procedures.
 - 2. Division 01 Section "Alteration Project Procedures" for general protection and work procedures for alteration projects.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 FIELD CONDITIONS

- A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Hazardous materials will be removed by Owner before start of the Work.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

- D. Storage or sale of removed items or materials on-site is not permitted.
- E. 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.

1.6 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 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/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

3.3 PROTECTION

- A. Temporary Protection: 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. 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.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

4. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

- B. Remove temporary barricades and protections where hazards no longer exist.

3.4 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. 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. 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 until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain fire watch during and for at least 8.0 hours after flame-cutting operations.
 6. Maintain adequate ventilation when using cutting torches.
 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

3.5 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, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. 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. See Section Division 07 "TPO Roofing" for new roofing requirements.
 1. Remove existing roof membrane, flashings, copings, and roof accessories.
 2. Remove existing roofing system down to substrate.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 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.
- B. Burning: Do not burn demolished materials.

3.7 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.

END OF SECTION 024119

SECTION 054000 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior non-load-bearing wall framing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product test reports.

D. Research reports.

1.4 QUALITY ASSURANCE

A. Product Tests: Mill certificates or data from a qualified independent testing agency.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

C. Comply with AISI S230 "Standard for Cold-Formed Steel Framing - Prescriptive Method for One and Two Family Dwellings."

PART 2 - PRODUCTS

2.1 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. American Panel TEC/Framing and Trusses
 - 2. MarinoWARE.
 - 3. Super Stud Building Products, Inc.

2.2 PERFORMANCE REQUIREMENTS

- A. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

2.3 COLD-FORMED STEEL FRAMING, GENERAL

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
 - 1. Grade: As required by structural performance.
 - 2. Coating: G60, A60, AZ50, or GF30.
- C. Steel Sheet for Vertical Deflection Clips: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
 - 1. Grade: As required by structural performance.
 - 2. Coating: G60.

2.4 EXTERIOR NON-LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
 - 1. Minimum Base-Metal Thickness: As required by structural performance.
 - 2. Flange Width: As required by structural performance.
 - 3. Section Properties: As required by structural performance.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and matching minimum base-metal thickness of steel studs.
- C. Vertical Deflection Clips: Manufacturer's standard bypass clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

2.5 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- B. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.
- C. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
 - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A 780.
- B. Shims: Load bearing, high-density multimonomer plastic, and nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.
- C. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.
- B. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.2 INSTALLATION, GENERAL

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
- D. Install framing members in one-piece lengths.

- E. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- G. Install insulation, specified in Section 072100 "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.
- I. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.3 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
 - 1. Stud Spacing: As indicated.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
- E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.4 FIELD QUALITY CONTROL

- A. Testing: Owner may engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports. Costs for this testing shall be invoiced against project's testing allowance unless noted elsewhere.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.5 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

SECTION 061053 - MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Rooftop equipment bases and support curbs.
 - 3. Wood blocking, cants, and nailers.
 - 4. Plywood backing panels.
- B. Related Sections:
 - 1. Division 06 Section "Sheathing."

1.3 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - 4. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Preservative-treated wood.
 - 2. Fire-retardant-treated wood.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Regional Materials: Manufacture dimension lumber within 100 miles of Project site from materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of Project site.
- B. Certified Wood: Certify lumber as "FSC Pure" in accordance with FSC STD-01-001 and FSC STD-40-004.
- C. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWPAC2.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - 2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- A. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing attached directly to the interior of below-grade exterior masonry or concrete walls.
 - 4. Wood framing members that are less than 18 inches above the ground in crawl spaces or unexcavated areas.
 - 5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Comply with performance requirements in AWPAC20 (lumber) and AWPAC27 (plywood).
 - 1. Use treatment that does not promote corrosion of metal fasteners.
 - 2. Use Exterior type for exterior locations and where indicated.

- B. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
- C. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- D. Application: Treat all miscellaneous carpentry, unless otherwise indicated.

2.4 DIMENSION LUMBER FRAMING

- A. Maximum Moisture Content: 15 percent.
- B. Non-Load-Bearing Interior Partitions: Construction or No. 2 grade of any species.
- C. Other Framing: No. 2 grade and the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Southern pine; SPIB.
 - 3. Douglas fir-larch; WCLIB or WWPA.

2.5 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Rooftop equipment bases and support curbs.
 - 4. Cants.
 - 5. Grounds.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 15 percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 15 percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 2 grade; SPIB.
 - 2. Eastern softwoods, No. 2 Common grade; NELMA.
 - 3. Northern species, No. 2 Common grade; NLGA.
 - 4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.6 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exterior, AC, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.7 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Screws for Fastening to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- F. Lag Bolts: ASME B18.2.1.
- G. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

2.8 METAL FRAMING ANCHORS

- A. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 coating designation.
 - 1. Use for interior locations where stainless steel is not indicated.
- B. Stainless-Steel Sheet: ASTM A 666, Type 304.
 - 1. Use for exterior locations and where indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
- D. Do not splice structural members between supports, unless otherwise indicated.
- E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- F. Provide fire blocking in stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.
- G. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- H. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- I. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- J. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.2 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

END OF SECTION 061053

SECTION 06110 - WOOD FRAMING

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2. SUMMARY:

- A. This portion of the specification sets forth the general requirements, including the quality and type of materials required for the installation of all lumber used for wood curbs, nailing strips, miscellaneous blocking material, unexposed fillers, fascias, edging strips, etc.
- B. APPLICABLE ROOF SECTIONS:
 - 1 Concrete deck roof areas to be covered under this section.

1.3. STORAGE:

- A. All material specified herein shall be stored (after delivery to the site) so that it will be fully protected from damage and weather and shall be piled to prevent warpage. All lumber shall be fully protected to maintain the original required moisture content as specified in item titled "Moisture Content".

1.4. OTHER REQUIREMENTS:

- A. Dimensions indicated on the drawings are nominal dimensions (except where details show actual sizes) and shall be subject to the standard reductions required for surfacing or tolerances permitted by the grading rules. Unless otherwise indicated on drawings, all material shall be S4S (surfaced four sides).

1.5. PROTECTION:

- A. All finished work shall be adequately protected against damage from any source.

1.6. COORDINATION:

- A. Carpenters shall coordinate their work with that of the other trades so that progress continues without interruption.

2. PART 2 - PRODUCTS

2.1. WOOD - FRAMING AND CURBS GRADING RULES, GRADES, AND SPECIES

- A. Lumber: Southern Pine, yellow pine, douglas fir, spruce, ponderosa pine, larch or Hemlock and shall meet the following minimum grade requirement of construction standard (75% #1 and 25% #2); free from warping and visible decay. Lumber shall be graded according to the standard grading rules of the Southern Pine Inspection Bureau, the West Coast Lumber Inspection Bureau, or the Western Wood Products Association.

2.2. MOISTURE CONTENT

- A. All lumber shall be air-dried or kiln-dried before treatment, so that the moisture content is not more than 19%. After treatment, it shall be kiln-dried at temperatures not exceeding 160 degrees F. (71 degrees C) so that the moisture content is not more than 19% at time of shipment

2.3. DECAY-RESISTANT TREATMENT

- A. Lumber in contact with roofing or acting as fascias, and all other exterior lumber, shall be Chemically Treated Wood or Natural rot resistant wood.
- B. Chemically Treated Wood
 - 1 Wood shall be pressure-treated with a preservative in accordance with AWWA Specifications and approved by the EPA. Chromate copper arsenate, creosote and oil-borne preservatives are not acceptable.
 - 2 Treating processes, material conditions, plant equipment, and other pertinent requirements shall conform to AWWA Specifications for specific kind of lumber and type of preservative to be used. Retention shall be as required for intended use.
- C. Natural rot resistant wood
 - 1 The following North America Softwoods may be used in lieu of chemically treated wood.
 - a Douglas Fir – Heartwood
 - b Southern Pine – Sapwood
 - Western Red Cedar – Heartwood
 - c Eastern White Cedar – Heartwood
 - Western Larch – Heartwood
 - Eastern Larch (Tamarack) - Heartwood
- D. All treated lumber shall bear the mark of a code recognized third party agency such as the AWWA.

2.4. PLYWOOD

- A. Grade: CDX or Cyme exterior Grade.
- B. Description: 5/8" thick.

2.5. MECHANICAL FASTENERS / WOOD TO STEEL DECK:

- A. Acceptable Manufacturers:
 - 1 Buildex Div. Of ITW Itasca, IL
 - 2 Olympic Manufacturing Group Inc. Agawam, MA
- B. Screw Length: Sufficient to engage steel deck $\frac{3}{4}$ "

2.6. WOOD TO WOOD:

- A. Type: Galvanized, common, annular ring nail. Length: Sufficient to penetrate underlay blocking 1-1/4 inches.
- B. Acceptable Manufacturers:

- 1 Buildex Div. of ITW Itasca, IL
- 2 Olympic Manufacturing Group Inc. Agawam, MA

2.7. WOOD TO MASONRY:

- A. Acceptable Manufacturers:
 - 1 Buildex Div. of ITW Itasca, IL
 - 2 Olympic Manufacturing Group Inc. Agawam, MA
 - 3 Rawl, Powers Fastening Co. New Rochelle, NY
- B. Length: As recommended by manufacturer.

2.8. WOOD TO HOLLOW MASONRY:

- A. Acceptable Manufacturers:
 - 1 Buildex Div. Of ITW Itasca, IL
 - 2 Olympic Manufacturing Group Inc. Agawam, MA
 - 3 Rawl, Powers Fastening Co. New Rochelle, NY
- B. Length: As recommended by manufacturer.

3. PART 3 - EXECUTION

3.1. CARPENTRY

- A. At roof edge to receive metal fascia, around all roof top penetration perimeters, and under any flashing component that is to have a roof flange mechanically fastened to roofing substrate;
- B. Mechanically attach wood blocking. Blocking thickness: Equal to final insulation thickness. Width: Six inches nominal.
- C. Fasteners shall be installed in two rows staggered. Spacing in any one row shall not exceed 24 inches. Within eight feet of outside corners, spacing shall not exceed twelve inches in any one row.
- D. Where required, offset blocking layers twelve inches, weave corners.
- E. When preservative treated wood is cut, the cut end shall be treated in accordance with AWWPA Specification M4.
- F. Lumber shall be accurately cut to the work requirements and shall be well fastened.
- G. Bolted fastenings shall have washers of adequate size under both heads and nuts. Nails shall be of correct size and quantity for proper fastening. Oversized nails that will result in splitting shall not be used. All fasteners shall be galvanized per ASTM A 153.

END OF SECTION 061100

SECTION 070150.19 - PREPARATION FOR REROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Full retrofit of roof areas and removal of wall, metal edge/fascia, wall base flashings and miscellaneous related detail flashings where indicated on drawings.

1.2 DEFINITIONS

- ##### A. Roofing Terminology:
- Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.3 ACTION SUBMITTALS

- ##### A. Product Data:
- For each type of product.
- ##### B. Roofing Submittal:
- Product data and description of roofing system to include; surface preparation requirements needed to receive permanent roof, and submit a letter from roofing manufacturer, stating acceptance of the roof and that its inclusion does not adversely affect the roofing system's resistance to fire and wind.

1.4 INFORMATIONAL SUBMITTALS

- ##### A. Photographs or Videotape:
- Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces that might be misconstrued as having been damaged by roof replacement operations. Submit before Work begins.

1.5 QUALITY ASSURANCE

- ##### A. Installer Qualifications:
- Approved by warrantor of existing roofing system to work on existing roofing.

1.6 FIELD CONDITIONS

- ##### A. Owner will occupy portions of building immediately below reroofing area.
- Conduct reroofing so Owner's operations are not disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations.
1. Coordinate work activities daily with Owner so Owner can place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and

- fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
2. Before working over structurally impaired areas of deck, notify Owner to evacuate occupants from below affected area. Verify that occupants below work area have been evacuated before proceeding with work over impaired deck area.
- B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
 - C. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
 - D. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

PART 2 - PRODUCTS

2.1 INFILL AND REPLACEMENT MATERIALS *(If applicable)*

- A. Use infill materials matching existing roofing system materials unless otherwise indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Shut off rooftop utilities, and service piping, if necessary, before beginning the work.
- B. Protect existing roofing system that is not to be reroofed.
- C. Coordinate with Owner to shut down air-intake equipment in the vicinity of the work. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- D. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday. Prevent debris from entering or blocking roof drains and conductors. Use roof-drain plugs specifically designed for this purpose. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.

3.2 ROOF TEAR-OFF

- A. General: Notify Owner or Owners representative each day of extent of roof tear-off proposed for that day.
- B. Remove pavers and accessories from roofing. *(If applicable)*
- C. Full Roof Tear-Off *(If applicable)*: Where indicated, remove existing roofing and other roofing system components down to the deck.

1. Bitumen and felts that are firmly bonded to concrete decks are permitted to remain if felts are dry. Remove unadhered bitumen, unadhered felts, and wet felts.
2. Remove excess asphalt from steel deck. A maximum of 15 lb/100 sq. ft. of asphalt is permitted to remain on steel decks.
3. Remove fasteners from deck or cut fasteners off slightly above deck surface.

3.3.1 WOOD DECK PREPARATION *(If applicable)*

- A. Inspect after tear-off of existing roofing system.
- B. If damaged by water degradation, if deck appears or feels inadequately attached to sub beam purlins, uncovered voids/holes, immediately notify Architect. Do not proceed with installation until directed by Architect.
- C. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Architect. Do not proceed with installation until directed by Architect.

3.3 INFILL MATERIALS INSTALLATION

- A. Immediately after roof tear-off, and inspection and repair, if needed, of deck, fill in tear-off areas to match existing roofing system construction.
- B. Install new roofing patch over roof infill area. If new roofing is installed the same day tear-off is made, roofing patch is not required.

3.4 BASE FLASHING REMOVAL

- A. Remove existing base flashings. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counter flashings that are to remain. Replace metal counterflashings damaged during removal with counter flashings of same metal, weight or thickness, and finish.
- C. When directed by Architect, replace parapet framing, wood blocking, curbs, and nailers to comply with Section 061053 Miscellaneous Rough Carpentry."

3.5 DISPOSAL

- A. Collect demolished materials and place in containers. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Transport and legally dispose of demolished materials off Owner's property.

END OF SECTION 070150.19

SECTION 071616 - CRYSTALLINE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes
 - 1. Crystalline waterproofing.
- B. Related Sections
 - 1. Division 03 Section for Cast-in-Place Concrete.
 - 2. Division 25 Section for Elevators.

1.3 SUBMITTALS

- A. Product Data: Include construction details, and material descriptions and installation instructions for crystalline waterproofing.
- B. Product Certificates: For crystalline waterproofing, signed by product manufacturer.
- C. Qualification Data: For Installer and manufacturer.
- D. Material Test Reports: For crystalline waterproofing.
- E. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

1.5 PROJECT CONDITIONS

- A. Proceed with waterproofing work only after pipe sleeves, vents, curbs, inserts, drains, and other projections through the substrate to be waterproofed have been completed. Proceed only after concrete and masonry substrate defects, including honeycombs, voids, and cracks, have been repaired to provide a sound substrate free of forming materials, including reveal inserts.
- B. Ambient Conditions: Proceed with waterproofing work only if temperature is maintained at 40 deg F or above during work and cure period, and space is well ventilated and kept free of water.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of crystalline waterproofing that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Failure to maintain watertight conditions within specified warranty period.
 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following or equal:
1. Crystalline Waterproofing:
 - a. American Permaquik Inc.; Super 200.
 - b. Anti-Hydro International, Inc.; Hydro Cap.
 - c. ICS Penetron International Ltd.; Penetron Addmix.
 - d. Tamms Industries, Inc.; Hey'Di K-11.
 - e. Vandex International Ltd.; Vandex Super.
 - f. Xypex Chemical Corporation; Xypex.
 2. Patching for Leak Repair:
 - a. AQUAFIN, Inc.; Fix 10-S or Mortar-1C.
 - b. Specon, Incorporated; Hydrocel (HCMM).
 - c. Tamms Industries, Inc.; Hey'Di Powder-X System.
 - d. ThoRoc, Div. of ChemRex; Tegraproof mortar.

2.2 MATERIALS

- A. Crystalline Waterproofing: A prepackaged, gray-colored proprietary blend of portland cement, specially treated sand, and active chemicals that, when mixed with water and applied, penetrates by capillary action into concrete or masonry and reacts chemically with free lime in the presence of water to develop crystalline growth within concrete or masonry capillaries to produce an impervious, dense, waterproof concrete or masonry with properties meeting or exceeding the following criteria:
1. Permeability: 0 for water at 33 feet when tested according to CE CRD-C 48.
 2. Compressive Strength: 3000 psi when tested according to ASTM C 109.
- B. Patching Compound: Cementitious waterproofing and repair mortar for filling and patching tie holes, honeycombs, reveals, and other imperfections; with properties meeting or exceeding the following criteria:
1. Compressive Strength: 7600 psi at 28 days when tested according to ASTM C 109.
 2. Flexural Strength: 710 psi at 28 days when tested according to ASTM C 348.

3. Shrinkage: Minus 0.093 percent at 28 days and plus 0.073 percent at 90 days when tested according to ASTM C 596.

C. Water: Potable.

2.3 PROPORTION AND DESIGN OF PROTECTIVE TOPPING MIX

- A. Protective Topping: Measure, batch, and mix portland cement and sand in the proportion of 1:3 and water. Blend together with mechanical mixer to required consistency.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Acceptance of Conditions: Examine substrates, with applicator present, where waterproofing is to be applied.
 1. Proceed with application only after unsatisfactory conditions have been corrected.
 2. Notify Architect in writing of active leaks or structural defects that would affect system performance.

3.2 PREPARATION

- A. Protect other work from damage from cleaning, preparation, and application of crystalline waterproofing. Provide temporary enclosure to confine spraying operation and to ensure adequate ambient temperatures and ventilation conditions for application.
- B. Stop active water leaks according to waterproofing manufacturer's written instructions.
- C. Repair damaged or unsatisfactory concrete or masonry according to manufacturer's written instructions.
- D. Surface Preparation: Comply with waterproofing manufacturer's written instructions to remove efflorescence, chalk, dust, dirt, mortar spatter, grease, oils, curing compounds, and form-release agents to ensure that waterproofing bonds to concrete or masonry surfaces.
 1. Clean masonry surfaces according to ASTM D 4261.
 - a. Lightweight Concrete Masonry: Etch with 10 percent muriatic (hydrochloric) acid solution or abrade surface by wire brushing. Remove acid residue until pH readings of water after rinse are not more than 1.0 pH lower or 2.0 pH higher than pH of water before rinse.
 - b. Medium- and Normal-Weight Concrete Masonry: Sandblast or bushhammer to a depth of 1/16 inch.
 2. Clean concrete surfaces according to ASTM D 4258.
 - a. Scratch- and Float-Finished Concrete: Etch with 10 percent muriatic (hydrochloric) acid solution according to ASTM D 4260.
 - b. Prepare smooth-formed and trowel-finished concrete by mechanical abrading or abrasive-blast cleaning according to ASTM D 4259.

3. Concrete Joints: Clean reveals according to waterproofing manufacturer's written instructions.

3.3 APPLICATION

- A. General: Comply with waterproofing manufacturer's written instructions for application.
 1. Dampen surface for several hours prior to application with water and maintain damp condition until applying waterproofing.
 2. Apply waterproofing to elevator pit surfaces.
 3. Number of Coats: One for brush or spray application.
 4. Dampen surface between coats.
- B. Final Coat Finish: Smooth.
- C. Moist-cure waterproofing for three days immediately after application has set, followed by two days of air drying as recommended in writing by manufacturer.

3.4 PROTECTION

- A. Protect applied crystalline waterproofing from rapid drying, severe weather exposure, and water accumulation. Maintain completed Work in moist condition for not less than three days by procedures recommended in writing by waterproofing manufacturer. Protect waterproofing from temperatures below 36 deg. F.

3.5 FIELD QUALITY CONTROL

- A. Inspection: Manufacturer's representative to inspect completed application and to provide a written report that application complies with manufacturer's written instructions.

END OF SECTION 071616

SECTION 072100 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Foam-plastic board insulation.
 - 2. Glass-fiber blanket insulation.
 - 3. Mineral-wool blanket insulation.
 - 4. Spray polyurethane foam insulation.

- B. Related Sections:

- 1. Division 07 Section for Membrane Roofing for insulation specified as part of roofing construction.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

PART 2 - PRODUCTS

2.1 FOAM-PLASTIC BOARD INSULATION

- A. Extruded-Polystyrene Board Insulation: ASTM C 578, of type and minimum compressive strength indicated below, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.
 - 1. Acceptable 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 or equal:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Owens Corning.
 - 2. Type IV, 25 psi.
 - 3. Type VII, 60 psi.

- B. Unfaced Wall Insulation Drainage Panels: Extruded-polystyrene board insulation complying with ASTM C 578, Type IV, 25-psi or Type VI, 40-psi minimum compressive strength; unfaced; fabricated with shiplap or channel edges and with one side having grooved drainage channels.
 - 1. Acceptable 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 or equal:
 - a. DiversiFoam Products.
 - b. Dow Chemical Company (The).
 - c. Pactiv Building Products.
- C. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

2.2 GLASS-FIBER BLANKET INSULATION

- A. Acceptable 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 or equal:
 - 1. CertainTeed Corporation.
 - 2. Guardian Building Products, Inc.
 - 3. Johns Manville.
 - 4. Knauf Insulation.
 - 5. Owens Corning.
- B. Unfaced, Glass-Fiber Blanket Insulation: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

2.3 MINERAL-WOOL BLANKET INSULATION

- A. Acceptable 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 or equal:
 - 1. Fibrex Insulations Inc.
 - 2. Owens Corning.
 - 3. Roxul Inc.
 - 4. Thermafiber.
- B. Unfaced, Mineral-Wool Blanket Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.

2.4 SPRAY POLYURETHANE FOAM INSULATION

- A. Open-Cell Polyurethane Foam Insulation: Spray-applied polyurethane foam using water as a blowing agent, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E 84.

1. 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 or equal:
 - a. BASF Corporation.
 - b. Dow Chemical Company (The).
 - c. Gaco Western LLC.
 - d. Henry Company.
2. Minimum density of 0.4 lb/cu. ft., thermal resistivity of 3.4 deg F x h x sq. ft./Btu x in. at 75 deg F.

2.5 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
 1. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation indicated.
- B. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position indicated with self-locking washer in place.
 1. Angle: Formed from 0.030-inch- thick, perforated, galvanized carbon-steel sheet with each leg 2 inches square.
 2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation indicated.
- C. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch- thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
 1. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
 - a. Ceiling plenums.
 - b. Attic spaces.
 - c. Where indicated.
- D. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates indicated without damaging insulation, fasteners, and substrates.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF BELOW-GRADE INSULATION

- A. On vertical footing and foundation wall surfaces, set insulation units according to manufacturer's written instructions.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.
- B. On horizontal surfaces under slabs, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches in from exterior walls.

3.4 INSTALLATION OF CAVITY-WALL INSULATION

- A. Foam-Plastic Board Insulation: Install pads of adhesive spaced approximately 24 inches o.c. both ways on inside face, and as recommended by manufacturer. Fit courses of insulation between wall ties and other obstructions, with edges butted tightly in both directions. Press units firmly against inside substrates.
 - 1. Supplement adhesive attachment of insulation by securing boards with two-piece wall ties designed for this purpose and specified in Division 04 Section "Unit Masonry."
- B. Cellular-Glass Board Insulation: Install with closely fitting joints using attachment method according to manufacturer's written instructions.

3.5 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Foam-Plastic Board Insulation: Seal joints between units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.
- C. Glass-Fiber or Mineral-Wool Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
- D. Spray-Applied Insulation: Apply spray-applied insulation according to manufacturer's written instructions. Do not apply insulation until installation of pipes, ducts, conduits, wiring, and electrical outlets in walls is completed and windows, electrical boxes, and other items not indicated to receive insulation are masked. After insulation is applied, make flush with face of studs by using method recommended by insulation manufacturer.
- E. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
1. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.6 INSTALLATION OF INSULATION IN CEILINGS FOR SOUND ATTENUATION

- A. Where glass-fiber blankets are indicated for sound attenuation above ceilings, install blanket insulation over entire ceiling area in thicknesses indicated. Extend insulation 48 inches up either side of partitions.

3.7 INSTALLATION OF INSULATION FOR CONCRETE SUBSTRATES

- A. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application indicated.
 2. Apply insulation standoffs to each spindle to create cavity width indicated between concrete substrate and insulation.
 3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation below indicated thickness.
 4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.

3.8 INSTALLATION OF CURTAIN-WALL INSULATION

- A. Install board insulation in curtain-wall construction where indicated on Drawings according to curtain-wall manufacturer's written instructions.
1. Hold insulation in place by securing metal clips and straps or integral pockets within window frames, spaced at intervals recommended in writing by insulation manufacturer to hold insulation securely in place without touching spandrel glass. Maintain cavity width of dimension indicated between insulation and glass.

2. Install insulation where it contacts perimeter fire-containment system to prevent insulation from bowing under pressure from perimeter fire-containment system.

3.9 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 072100

SECTION 072210 - ROOF INSULATION

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2. SUMMARY:

- A. This portion of the specification describes materials and workmanship required for the installation of insulation over Concrete decks.
- B. All materials described herein shall be furnished and installed by the roofing contractor unless specifically noted otherwise.
- C. Roof Areas covered under this section: Metal Deck Areas

1.3. PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Insulation shall be delivered to the site in an undamaged and dry condition. Material received that is not dry or is otherwise damaged shall be rejected.
- B. Proper storage on or off the site shall be the responsibility of the roofing contractor.
- C. Any unused insulation remaining on the roof at the end of the workday shall be returned to storage.

1.4. INSULATION - GENERAL

- A. All insulation materials must be approved by the warrantor of primary roof membrane materials. Samples should be provided to the manufacturer and written approval from the warrantor of primary roof membrane materials is required before ordering these materials for the project.
- B. Insulation boards shall be full size except when cutting is required at roof edges and openings. Boards that are broken, cracked, have been exposed to moisture, or are otherwise damaged shall not be used.
- C. The proper installation and fit of wood nailers, blocking, and other rough carpentry in appropriate locations shall be verified prior to installation of roof insulation.
- D. Caution shall be exercised with construction traffic to avoid damage to new insulation. Breaking or crushing of insulation is unacceptable and any damaged insulation shall be replaced at the roofing contractor's expense.
- E. Insulation shall be laid with end joints staggered and all joints tight; however, boards shall not be forced into place.

- F. No more insulation shall be installed during any work period than can be covered by all plies of roofing during the same work period. At the end of the work period, temporary edge seals shall be installed to protect the roof insulation. Upon resumption of work, they must be removed. Such seals shall consist of strips of roofing felt applied and topcoated with specified interply adhesive.
- G. Insulation surfaces shall be cleared of all debris before roofing is placed.
- H. All precautions should be made to prevent bitumen drippage during and after application of insulation and roofing materials.

2. PART 2 - PRODUCTS

2.1. INSULATION

A. Insulation Types:

- 1 First Layer: Flat Polyisocyanurate, minimum thickness 2.5”.
- 2 Second Layer: Securerock® Roof Board ½”
- 3 Cants: ASTM C728-82, perlite.
- 4 Crickets: ASTM C728-82, perlite, factory fabricated, 1/2-inch slope, 2 x 4 feet dimension.

A1. Insulation for HVAC Air Handling Units:

- 1 One layer (to match existing vertical standing seam height) Non-tapered Rigid insulation.*

B. Insulation Adhesives and Fasteners:

- 1 Cold Adhesive or Hot Applied

- a. Olybond Roof Insulation Adhesive by Olympic Fasteners, Inc.,
- b. Insta-Stik, Insta-Foam Products, Joliet, IL
- c. or approved equal.

3. PART 3 - EXECUTION

3.1. CONDITION OF DECK

- A. Prior to installing insulation, deck must be inspected and accepted by the roofing contractor. Contractor must verify deck slopes and determine if insulation stops and/or backnailing is required by the warranty supplier based on the system being installed. All deficiencies must be corrected prior to start of work.

- B. The roofing contractor shall perform all other work of preparing the deck. When insulation is applied, the deck shall be dry and free of dew, frost, ice, and snow.
- C. The roofing contractor shall notify the building owner's representative of any improper installations.

3.2. THERMAL INSULATION

A. First Layer:

- 1 Adhere insulation according to cold adhesive manufacturer's recommended procedures and specifications. Contractor shall install per the procedures

B. Second Layer:

- 1 Adhere insulation according to cold adhesive manufacturer's recommended procedures and specifications.

C. Insulation installation requirements:

- 1 Stagger joints at least six inches.
- 2 Install insulation boards in courses parallel to roof edges, mopping surface up.
- 3 Firmly butt each insulation board to surrounding boards. Do not jam or deform boards.
- 4 Maximum elevation variation between boards at joints: 1/8 inch.
- 5 Cut and fit insulation boards where roof deck intersects vertical surfaces. Cut board 1/4 inch from vertical surface.
- 6 All boards installed shall be 18 inches in length or width, minimum.
- 7 Promptly spread any adhesive that may accumulate on insulation surface to achieve smooth surface for roofing installation.
- 8 If warranty supplier requires backnailing of the plies due to slope, wood insulation stops or nailers shall be provided.

a. The wood nailer thickness shall be equal to the thickness of the insulation so that a smooth transition between the top surface of the membrane substrate and the top surface of the wood nailer is achieved.

- b. Spacing of the wood nailers shall not exceed the recommendations of the warranty supplier.

3.3. TAPERED EDGE INSTALLATION

- A. Tapered edge strips shall be adhered with the specified insulation adhesive.

- B. Tapered edge strips are to be installed around all drains to form a continuous 48-inch square sump.
- C. Tapered edge strips shall be used at perimeter roof edge where nailer and gravel stop is raised.

3.4. CANTS

- A. Cant strips shall be installed at all 90-degree angles where the horizontal installation of insulation meets the vertical sides of roof penetrations and walls. Cants must be installed prior to application of membrane and flashings.

END OF SECTION 072210

SECTION 075216 - BUILT-UP ROOFING (TORCH-APPLIED) MODIFIED ROLLED ROOFING)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. This portion of the specification sets forth the warranty requirements for the following roof area(s): Reference roof areas according to drawings and specifications set forth for ***Gerry Green Plaza, 200 W. Second St., Plainfield, NJ***

1.2 SCOPE OF WORK

- A. Furnish and install insulation, built-up roofing, flashings, and miscellaneous materials as indicated on attached drawings.
 - 1. Replacement roofing areas where indicated (See drawings).
 - 2. Removal of existing roofing, flashings, insulation and related materials as indicated on the drawings for roofs to be replaced. Roof replacement areas where indicated.
- B. Work includes (***Re-roofing Procedure*** / Ref. drawings attached for described procedure below):
 - 1. Removal of single ply membrane only and discard.
 - a. Removal and replacement of ALL wet and/or damp insulation, designated by Infrared report attached and within the specification package. (*Replacement insulation shall be identical, in kind and height w/surrounding insulation.*)
 - 2. Installation of the following:
 - a. Mechanical attachment of Secure Rock®, ½”thick divorce board. (non-tapered/ see specifications below)
 - b. Isocyanurate board and ½” cover board crickets. (see specifications below)
 - c. Torch-applied Modified (*Rolled*) built-up roofing system. White granule surface.
 - d. Specified flashings and accessories.
 - 3. Rework existing internal roof drain bowl assemblies. Replace broken bolts, drain rings and drain cages ((if needed).
 - 4. Installation of miscellaneous flashings and accessories.
- C. Related Sections include the following:
 - 1. Division 1 Section “Alternates Section” for description of proposed alternates.

1.3 QUALITY CONTROL

- A. Contractor shall:
 - 1. Be experienced in torch-applied modified built-up roofing 5 yrs. min.
 - 2. Provide list of at least 3 jobs available for inspection within 50-mile radius of Owner employing same system.
 - 3. Be acceptable by roofing material supplier.
- C. Roofing material supplier shall:

1. Be Associate Member in good standing with National Roofing Contractors' Association.
2. Be nationally recognized in roofing, waterproofing, and moisture survey industry.
3. Provide Owner names of at least 3 qualified applicators.
4. Employ full-time field Engineering Services Representative available for monitoring project work on a periodic basis to conduct site inspection; report job progress, quality of work as well as for roof system "*Final Inspection*".
7. Have not been in Chapter 11 during the past five (5) years.
8. Be approved by Architect and/or Construction Manager (if applicable).

D. Progress Meetings

1. Will be scheduled by Architect, as required.
2. Attendance: Architect, contractor, job superintendent, roofing material supplier, and subcontractors, as appropriate.
3. Minimum Agenda:
 - a. Review of Work progress.
 - b. Field observations, problems, and decisions.
 - c. Identification of problems, which impede planned progress.
 - d. Maintenance of progress schedule.
 - e. Other business relating to Work.

- E. A pre-roofing conference shall be held at the project site in advance of the time scheduled for roofing work. The purpose of this conference is to review requirements for the work and conditions that could possibly interfere with successful performance of the work. This conference shall review existing conditions and deck surfaces, roof insulation, roofing, flashing, and any other items related to the roof system. Every party who is concerned with the work, or required to coordinate with it or to protect it thereafter, should attend this conference, including the authorized representative of building owner, the roofing system warrantor, and the roofing contractor. A record of all decisions and agreements made at this meeting, as well as a list of attendees shall be recorded for the job record.

F. Final Inspection

1. Will be scheduled by Architect, upon job completion.
2. Attendance: Architect, contractor and roofing material supplier.
 - a. Minimum Agenda:
 - 1) Walkover inspection.
 - 2) Identification of problems, which may impede issuance of warranty.

G. Random Sampling

1. During course of work, Architect or Owner's Representative may secure samples of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
2. If test results prove that a material is not functionally equal to specified material:
 - a. Contractor shall pay for all testing.
 - b. All roofing installed and found not to comply with specifications shall be removed and replaced, at no charge, with specified materials.

1.4 SUBMITTALS

- A. Submit prior to job-start:

1. Product literature
2. Product Data:
 - a. Material safety data sheets.

B. Red Label Products:

1. Certification from roofing material supplier that cold process coatings are not red label.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials

1. Deliver materials to jobsite in new, dry, unopened, and well-marked containers showing product and manufacturer's name.
2. Deliver materials in sufficient quantity to allow continuity of work.
3. Coordinate delivery to avoid Architect involvement.

B. Storage of Materials [EXTERIOR STORAGE ONLY, NO TRAILER]

1. Store roll goods on edges only. Discard rolls, which have been flattened, creased, or otherwise damaged. Place materials on pallets. Do not stack pallets.
2. Stack insulation on pallets.
3. Store materials marked "keep from freezing" in areas where temperatures will remain above 40°F.
4. Neatly stack wood on dunnage.
5. Remove plastic packaging shrouds. Cover top and sides of all stored materials with canvas tarpaulin (not polyethylene). Secure tarpaulin.
6. Rooftop storage: Disperse material to avoid concentrated loading.
7. Materials necessary for two day's work may be stockpiled on roof.

C. Material Handling

1. Handle materials to avoid bending, tearing, or other damage during transportation and installation.
2. Material handling equipment shall be selected and operated so as not to damage existing construction or applied roofing. Do not operate or locate material handling equipment on locations that will hinder smooth flow of vehicular or pedestrian traffic.

1.6 SITE CONDITIONS

A. Field Measurements and Material Quantities

1. Applicator shall have SOLE responsibility for accuracy of all measurements and estimate of material quantities and sizes.

B. Existing Conditions

1. Building space directly under roof area covered by this specification will be utilized by on-going new construction operations. Coordinate with other trades according unless other written or verbal approval is received by Architect.
2. Access to roof shall be from exterior only. No roofing employees will be allowed within building.

C. Environmental requirements

1. Do not work in rain, snow, below 40°F, or in presence of water.

2. Do not install materials marked "keep from freezing" when daily temperatures are scheduled to fall below 40°F.
4. Do not perform masonry work below 35°F. Make proper provisions to protect work from freezing 48 hours after laying if work is performed between 35°F. and 45°F.
5. Remove any work exposed to freezing.

D. Security Requirements

1. Comply with Owner security requirements (if any).
2. Provide Architect with current list of accredited persons.
3. Comply with Federal, State, County, local and Owner fire and safety requirements.
4. Advise Architect whenever work is expected to be hazardous to Owner employees and/or operations.

1.7 WARRANTY

- A. Upon project completion and material manufacturer's acceptance, and once complete payment has been received by both the Contractor and material manufacturer, the Contractor shall deliver to the Owner a **Twenty-Five (25) Year, No Dollar Limit, Non-Prorated Warranty.**
1. If material manufacturer is an owned subsidiary of another corporation, the parent company will be required to issue the warranty or a notarized letter from an officer of the parent company certifying that they will issue the warranty as specified in this bid request.
 2. Warranty shall cover all components installed under this specification. This includes all labor and materials necessary to correct any deficiencies during life of the warranty. Components include items such as, but not limited to, insulation, roof membrane, flashings, metal components, fasteners, drains, and etc.
 3. The Contractor shall certify, by letter, from the manufacturer of the roofing system, to Architect in compliance with the above guarantee requirements. The letter shall certify that the Twenty-Five (25) Year Systems Warranty required by these specifications will be upon proper completion of the roof system installation.

1.8 UNIT PRICING

- a. Provide unit prices in accordance with the Bid form and requirements of Division
 1. New internal roof drains plus line connection (*If necessary*).
 2. Metal deck:
 - a. Repair (*if necessary*)
 - b. Spot replacement \$ per/sq.ft. (*if necessary*)

PART 2 - PRODUCTS

2.1 GENERAL

- A. Comply with Quality Control, References, Specifications, and manufacturer's data. Products containing asbestos are prohibited on this product. Use only asbestos-free products.
- B. Use products with personal protection. User must read container label and material safety data sheets prior to use then shall submit M.S.D. Sheets to the Owner.

2.2 ACCEPTABLE MANUFACTURER

- A. Manufacturer must comply with all requirements refer to Paragraph 2.4 A, B, 2.6B1 and 2.9.
- B. Basis-of-Design Manufacturers: Products listed herein are as manufactured by ***SR Products, Inc. (Basis of Design)***, Youngstown, OH, Telephone (440) 248-0220. Comparable products by other manufacturers may be submitted for consideration as equals, subject to the requirements of Division 1

2.3 WOOD BLOCKING AND CURBS

- A. Lumber: Southern Pine; #2 grade; free from warping and visible decay; pressure treated. Comply with applicable requirements of AWP. Do not use chemicals containing chromate copper arsenate.
- C. Fiber cant: 4 x 4 cut on a bias.

2.4 METAL FLASHING

- A. Metal coping: Storm Defender Coping 100 by S.R. .Products, Inc. Youngstown, OH or approved equal (Refer. Drwgs.)
 - 1. Thickness: 0.050 min.
 - 2. Fascia/leg width: Five (5) inches, unless otherwise noted.
 - 3. Finish: Kynar coating. Color as selected by Architect. Shall be standard Kynar color as produced by S.R. Products, Inc. or approved equal.
 - 4. Coping size: V.I.F.
- B. Termination bar flashing:
 - 1. Termination bar: ASTM B221-83, 3/16 x 1 inch, aluminum bar, alloy 6063-T6.
- C. Termination bar sealant:
 - 1. SR Caulk Sealant by SR Prod., Inc., Sonnaborn NP-1 polyurethane caulk sealant, or approved equal.
- D. Reglets and Counterflashings:
 - 1. Fry, Springlok Flashing System with Type "MA" Masonry Reglets at new construction and Type "SM" Surface-Mounted Reglet, S.R. Products, Inc. flashing system or approved equal, at existing wall construction.
 - 2. Aluminum, ASTM B209-89, alloy and temper - 3003-H14, mill finish.
 - 3. Thickness: 0.040 inches.
- E. Plumbing Vents
 - 1. ASTM B29-79 (1984), four 11lb. sheet lead.
 - 2. Work shall be in accordance with Architectural Sheet Metal Manual, Third Edition, as issued by Sheet Metal and Air Conditioning Contractors' National Association, Inc., (SMACNA).

2.5 INTERPLY AND MEMBRANE ADHESIVE (deck substrate and base sheet only. (if applicable))

- A. Materials for surface preparation and adhesion for base sheet/vapor barrier.
 - 1. Interply adhesive:
 - a. Type III asphalt, ASTM D 312 by SR Prod., Inc., Trumbull, GAF or approved equal.
 - 1) Softening Point: 185°F - 205°F
 - 2) Flash Point 500°F
 - 3) Penetration @ 77°F 15-35 units
 - 4) Ductility @ 77°F 2.5 cm
 - 2. Surface primer:
 - a. SR Low VOC Asphalt Primer by S.R. Products, Inc., Youngstown, OH or approved equal.

2.6 BASE SHEET

- A. Vapor retarder: Existing vapor barrier may remain if watertight integrity has not been compromised (*N/A*).
 - 1. Vapor retarder: SR Base Ply (Type G-2) by S.R. Products, Inc. Youngstown, OH or approved equal.
- B. Base Sheet: Existing base sheet shall be completely removed, and a new base sheet shall be mechanically fastened to **Tectum®** deck in accordance to FM standards for wind uplift.
 - 1. Base sheet: **Simon Glass Base Sheet** by SR Products Inc., Youngstown, Ohio or approved equal.
- C. Base Sheet: Existing base sheet shall remain (if deemed uncompromised and intact.) or remove and replace new base sheet shall be mechanically fastened to metal perforated metal fluted decking, so as hot-applied asphalt will not be allowed to drip through perforated holes in decking.

2.7 MECHANICAL FASTENERS

- A. Insulation (Bottom layer) to metal deck / ***“Spot” replacement as indicated in drawings:***
 - 1. Deckfast #12 screw, plastic disc or metal plate by Construction Fasteners, Inc., Wyomissing, PA.
 - 2. Insul-Fixx #12, plastic disc or metal plate by Fabco Fastening Systems, Berea, OH.
 - 3. Kwick-Deck screw with Oxyseal coating; plastic disc or metal plate; Atlas Bolt & Screw, Ashland, OH.
 - 4. Rawl Deck Screw#12, plastic/metal plate by The Rawlplug Co., Inc., New Rochelle, NY.
 - 5. Roofgrip screw, plastic discs or metals plate by Buildex Div., of ITW, Itasca, IL.
 - 6. Grip Deck screw, plastic or metal plate, by Buildex Div. of ITW, Itasca, IL.
 - 7. Length: Sufficient to penetrate steel deck 1/2 inch.
 - a. Roof insulation to be attached to the top of the steel acoustic roof deck ribs only.
- NOTE: Fasteners to penetrate the top rib by 1 inch maximum (fastener length = roof**

insulation thickness plus 1 inch maximum).

A. Wood to Wood:

1. Type: Galvanized, common, annular ring nail. Length: Sufficient to penetrate underlay blocking 1-1/4 inches.
2. Acceptable manufacturers:
 - a. Independent Nail, Inc. Bridgewater, MA.
 - b. W.H. Maze Co., Peru, IL.
 - c. Crickets;
 - 1) FSHH-1-1972/2(1), Class1, isocyanurate 1/2" per/running/ft. (Bottom Layer)
 - 2) Fiberboard ASTM C728 1/2" ; Thick 4' x 4' boards (Top Layer)

B. Wood to masonry:

1. Tapcon 1/4" diameter, Phillips pan head anchor Buildex Div. of ITW, Itasca, IL.
2. Confas - Construction Fasteners, Inc., Wyomissing, PA.
3. Con-fixx - Fabco Fastening Systems, West Newton, PA.
4. #14-10 Heavy Duty, all Purpose Screw - Olympic Manuf'g Group, Inc., Agawam, MA.
5. Tru-Fast fastener (stainless steel) - The Tru-Fast Corp., Bryan, OH.
6. Length: Sufficient to provide 1-1/2" inch embedment.

D. Aluminum sheet metal to wood blocking:

1. FS FF-N-105B(3) Type II, Style 20, roofing nails; 6061- T913 alloy wire, flat head, diamond point, round, barbed shank.
2. Length: Sufficient to penetrate wood blocking 1-1/4 inches minimum.

E. Termination bar to masonry:

1. Tapcon 1/4" inch diameter, Phillips flat head anchor with EPDM washer by Buildex Div. of ITW, Itasca, IL.
2. Zamac Nailin with stainless steel nails by The Rawlplug Co., Inc., New Rochelle, NY.
3. Length: Sufficient to provide 1/4" inch embedment minimum.

F. Termination bar to sheet metal:

1. Fab-Lok Fac 10-8 stainless steel screw, aluminum sleeve by Fabco Fastening Systems, West Newton, PA.

G. Drawband:

1. Gold Seal stainless steel worm gear clamp by Murray Corporation, Cockeysville, MD.
2. Power-Seal stainless steel worm drive clamps by Breeze Clamp Co., Saltsburg, PA.

2.8 INSULATION "Spot" replacement areas as indicated in drawings):

A. Insulation to be mechanically fastened into existing metal deck substrate.

1. Match existing surrounding insulation type and thickness. First (bottom) Layer:
NOTE: Mechanically fasten (bottom/base) layer insulation into metal decking accordingly.

2.8.1 INSULATION

- A. Existing insulation and *NEW* divorce board:
1. Bottom Layer: Flat Polyisocyanurate 3.5" thick FS HH-I-1972/2(1), manufactured by Hunter Panels Corp. or approved equal.
 3. Top Layer: Securerock® by USG, Densdeck® ½" thick recovery/divorce board or approved equal.
- B. Divorce board to existing insulation (*To roof areas specified for re-roof procedure only*):
1. Single Layer: Securerock® by USG, Densdeck® ½" thick, recovery board or approved equal.
- C. Tapered Edge Strips, Cants and Crickets: Typical at All Roof Areas
1. Tapered edge strip: ASTM C728-82, perlite. tapered from 1-5/8 inch to 1/8 inch (on twelve-inch dimension), size 12 x 48 inches or as approved by the system warrantor's representative
 2. Cants: ASTM C728-82, Perlite.
 3. Crickets: ASTM C728-82, Perlite, factory fabricated, 1/2 inch slope, 2 x 4 feet dimension.
- D. Insulation Adhesives:
1. **Cold-applied Adhesive: *Oly-Bond*** cold-applied adhesive mfg. by Olympic fastener, ***INSTA-STIK***® by The DOW Chemical Company, (1-866-583-2583) or approved equal cold applied approved equal. (*if applicable*)

2.9 MULTI-PLY ROOFING MATERIALS

A. Sheet Materials:

1. Top Cap (*field & Flashing*) Ply Sheet Torch-Applied:

SR IRO Ply MA-4 Premium FR by SR Products, Inc., or approved equal

Property	Typical Value	Test Method
Thickness, mil	170 (4.3mm)	ASTM D 6222 Type 1 Grade G
Tensile Strength, 73.4 + 3.6°F lbf/in. (kN/m)	114 MD 85MD	ASTM D 6222 Type 1 Grade G
Elongation, 73.4 □ 3.6°F, % Type 1	47MD 47XMD	ASTM D 6222 Grade G
Tensile Strength, 0°F □ 3.6°F lbf/in. (kN/m)	135 MD 115 XMD	ASTM D 6222 Type 1 Grade G
Ultimate Elongation, 0°F +3.6°F, 5%	52 MD 53 XMD	ASTM D 6222 Type 1 Grade G
Tear Strength, 73.4 + 3.6°F, lbf/in. lbf/in. (kN/m)	134 MD 122 XMD	ASTM D 6222 Type 1 Grade G

Low Temperature Flexibility, °C, °F	0° , 32°	ASTM D 6222 Type 1 Grade G
Dimensional Stability, %	<0.2	ASTM D 6222 Type 1 Grade G
Compound Stability, °F	230	ASTM D 6222 Type 1 Grade G
Granule Embedment (Grams Loss), max.	<2.0 g	ASTM D 6222 Type 1 Grade G

2. Base Ply(s) *Field (2 plies) & Flashing (one ply)* Sheet, Torch-Applied:

SR IRO Ply SA-4 (*Flash 'g base ply*) by SR Products, Inc., or approved equal

Property	Typical Value	Test Method
Thickness, mil	140 (3.5mm)	ASTM D 6222 Type 1 Grade S
Maximum Load, 73.4 + 3.6°F	100 MD	ASTM D 6222
lbf/in. (kN/m)	75 MD	Grade S
Elongation @ peak load, 73.4 □ 3.6°F, %	45MD 45XMD	ASTM D 6222 Type 1 Grade S
Maximum Load, 0°F □ 3.6°F	120MD 100 XMD	ASTM D 6222 Type 1 Grade S
Elongation at Max. Load, 0°F +3.6°F, 5%	52 MD	ASTM
	54 XMD	Grade S
Ultimate Elongation, 0°F +3.6°F,%	51 MD	ASTM D 6222
	53 XMD	Grade S
Tear Strength, 73.4 + 3.6°F,lbs/in.	122 MD	ASTM D 6222
lbf/in. (kN/m)	116 XMD 122 XMD	Grade S
Low Temperature Flexibility, °C, °F	0° , 32°	ASTM D 6222 Type 1 Grade S
Dimensional Stability, %	<0.5	ASTM D 6222 Type 1 Grade S
Compound Stability, °F	230	ASTM D 6222 Type 1 Grade S

3. Related Roofing System Materials:

Asphalt Primer: **SR Low VOC Asphalt Primer** by S.R. Products, Inc., Youngstown OH.

or approved equal.

Test	Typical Value	Test Method
Asbestos Content	0%	EPA 600/M4-82-020
Viscosity	10-30 cps	ASTM D 2196

Density	6.9 lbs/gal.	ASTM D 1475
Solids by Weight	25-30%	ASTM D 4479
Flash Point	101°F minimum	ASTM D 93

SR RMA Elastic Modified Asphalt Flashing Adhesive by S.R. Products, Inc.,
Youngstown, OH or approved equal.

Test	Typical Value	Test Method
Tensile Strength (psi)	122.44	ASTM D 412
Elongation %	119.91 %	ASTM D 412
Non-volatile Matter %	54.3	ASTM D 4586
Minerals and Stabilizer %	33.54	ASTM D 4
Uniformity & Workability (pass/fail)	pass	ASTM D 4586
Pliability @ 0°C	pass	ASTM D 4586
Viscosity (cps)	95,2000	ASTM D 2106
T-Peel to Glass Base Sheet (lbs)	1.71	ASTM D 5405
1" Lap Sheers to Glass Base Sheet (lbs)	39.88	ASTM D 5405
Density (lbs./gal.)	7.82	ASTM D 1475
Water Content %	.25	ASTM D 95

Asphalt Mastic: **SR RMA Mastic** by S.R. Products, Inc., Youngstown, OH. or
approved equal.

Test	Typical Value	Test Method
Asbestos Content	0%	EPA 600/M4-82-020
Non-Volatile Matter by Weight	76-82%	ASTM D 4586
Viscosity @ 77°F	450,000 - 950,000 cP	ASTM D 2196
Density @ 77°F	9.5 - 10.0 lb/gal.	ASTM D 1475
Resistance to Sag @ 140°F	1/8" maximum	ASTM D 4586
Adhesion to Wet Surfaces	55%	ASTM D 3409
Moisture by Weight	1.5%	ASTM D 4586
Mineral or Other Stabilizers by Weight	38%	ASTM D 4586
Asphalt by Weight	40%	ASTM D 4586
Uniformity & Workability	Acceptable as described	ASTM D 4586
Behavior @ 140°F	No blistering	ASTM D 4586
Pliability @ 32°F	No cracking/separation	ASTM D 4586

2.10 WALKWAY PADS (See drawings for placement, or locate from roof hatch to serviceable equipment)

- A. Provide 60" x 36" poly tread rubber compound sheet walkway pads as manufactured by S.R. Products, Inc. or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify installation conditions as satisfactory to receive work.
- B. Do not begin roofing until all unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions.
- C. Verify that work of other trades penetrating roof deck or requiring men and equipment to transverse roof deck has been approved by Architect, manufacturer, and roofing contractor.
- E. Check projections, curbs, and deck for inadequate anchorage, foreign material, moisture, or unevenness that would prevent quality and execution of new roofing system

3.2 GENERAL WORKMANSHIP

- A. Substrate: Free of foreign particles prior to laying roof membrane.
- B. Phased application: Not permitted. All plies shall be completed each day.
- B. Traffic and equipment: Keep off completed plies until adhesive has set.
- D. Wrapper and packaging materials: Not to be included in roofing system.
- E. Bitumen heating:
 - 1. Use low burner flames during initial melt- downs.
 - 2. Circulate modified bitumen after initial melt- down.
 - 3. Maximum bitumen temperature: 550°F. Application temperature range: 400° - 500°F.
- F. Kettle: Free of contaminants (asphalt or coal tar pitch).
- G. Application rates: Bitumen quantities for waterstop/tie-offs, flashings, miscellaneous detail applications, and minimum kettle capacity are not included in application rates. To account for these factors, add approximately 25% additional bitumen on a total-job average basis.
- H. Mechanical fasteners: Seated firmly in discs w/fastener heads flush or below disc's top surfaces.
- I. Length: Sufficient to accommodate roof insulation thickness and engage metal deck 1/2 inch.
- J. Insulation: install insulation boards in courses parallel to roof edges. Mopping surface up. Firmly butt each insulation board to surrounding boards. Do not jam or deform boards. Eliminate open joints and uneven surfaces. Maximum insulation gap: 1/4/inch. Fill insulation board joint gaps larger than 1/4 inch with roof insulation. Stagger joints at least six (6) inches.
- K. Filler size: Eighteen (18) inches in length or width, minimum.
- L. Base flashing height: Not less than eight inches, not higher than twelve inches above finished roof surface.
- M. Flashing adhesive: Allow solvent to flash prior to installation of flashing sheet.
- N. Modified torch-applied sheeting end laps: Overlap no less than 9" when torch-applied.

- O. Bar terminated/elastomeric sheeting flashings: Sandwich top of modified bitumenous sheeting between two layers flashing tape.

3.3 PREPARATION

A. Protection

- 1. Contractor shall be responsible for protection of property during course of work. Lawns, shrubbery, paved areas, and building shall be protected from damage. Repair damage at no extra cost to Owner.

- B. Provide at site prior to commencing removal of debris, a dumpster or dump truck to be located adjacent to building where directed by Architect. Protect building surfaces at set-up area with tarpaulin. Secure tarpaulin. Remove dumpster from premises when full and empty at approved dumping or refuse area.

- C. Deliver empty dumpster to site for further use. Upon job completion, dumpster shall be removed from premises. Spilled or scattered debris shall be cleaned up immediately. Removed material to be disposed from roof as it accumulates.

- D. Flashing and roof membrane repairs shall be installed and sealed in a watertight manner on same day of installation or before arrival of inclement weather.

- E. Roofing, flashings, membrane repairs, and insulation shall be installed and sealed in a watertight manner on same day of installation or before arrival of inclement weather.

- F. At start of each workday drains within daily work area shall be plugged. Plugs to be removed at end of each workday or before arrival of inclement weather.

- G. Preparation work shall be limited to those areas that can be covered with installed roofing material on same day or before arrival of inclement weather.

- H. Arrange work sequence to avoid use of newly constructed roofing for storage, walking surface, and equipment movement. Move equipment and ground storage areas as work progresses.

- I. At end of each working day, removal areas shall be sealed with water stops along edges to prevent water entry.

- J. Provide clean plywood walkways and take other precautions required to prevent tracking of debris from existing membrane into new work area where debris can be trapped within new roofing membrane.

- K. Contractor shall instruct and police his workmen to ensure that no debris is tracked into new work areas on workmen's shoes or equipment wheels. Discovery of entrapped debris within new membrane is sufficient cause for its rejection.

- L. Cover windows with protective coating prior to application of damp-proofing materials.

- M. Do not allow pilot holes and/or insulation fasteners to penetrate through form-board.

N. Surface preparation

1. Remove any debris from (*at spot replacement areas*), existing Isocyanurate insulation and from metal flutes/decking. Sweep clean.
 - a. Check for any detachment of existing metal decking from related joist to sub-purlin beam substrates.

3.4 CARPENTRY

A. At coping:

1. Mechanically attach wood blocking to masonry with 3/8-inch dia. wedge anchors four feet o/c., min. two fasteners per section of blocking. Countersink anchors flush with blocking surface. Blocking thickness: Two inches nominal. Blocking width: Flush with edges.

B. Flashings (Walls & Parapets):

1. Mechanically attach wood blocking to flashing base. Blocking thickness: Equal to final insulation thickness. Width: Six inches nominal.
2. Fasteners shall be installed in two rows staggered. Spacing in any one row shall not exceed 24 inches. Within eight feet of outside corners, spacing shall not exceed twelve inches; weave corners.
3. Install 45° and continuous wood cants (4 x 4's) at intersections of horizontal wood blocking and vertical flashing surfaces. Nail twelve inches o/c.

C. Wood/Concrete Curbs

1. Mechanically attach additional wood blocking atop of curb to raise final curb height eight inches minimum above new roofing plane. Blocking flush with outside curb surface.

D. Sleepers

1. Mechanically attach wood blocking to structural deck at sleeper locations.
2. Height: Equal to final insulation surface.
3. Width: Six inches nominal.
4. Length: Eight inches greater than sleeper.

E. Plumbing Vent Locations

1. Mechanically attach wood blocking to structural deck at all pitch pan locations; minimum two fasteners per section. Blocking thickness: Equal to final insulation thickness.
 - b. Width: Six inches, nominal.
2. Offset blocking layers twelve inches; weave corners.

3.5 THERMAL INSULATION

A. Divorce board to existing isocyanurate insulation into metal deck substrate. (***Ref. drawings for re-roof procedure***):

1. Mechanically attach 1/2" divorce board through existing isocyanurate insulation boards into metal deck substrate.

Note: Install additional fasteners for exiting insulation if needed for proper anchorage.

Note: Install additional fasteners at corner termination and metal edge perimeter

termin-

ations, to ensure securement from wind uplift. (if necessary)

- b. Drive mechanical fasteners flush to top surface.
- c. Filler insulation requires (2) fasteners per piece min.

C. Stagger joints at least six inches.

D. Install insulation/divorce boards in courses parallel to roof edges mopping surface up. Firmly butt each insulation board to surrounding boards. Do not jam or deform boards.

- 1. Maximum insulation gaps: 1/4 inch. Fill insulation board joint gaps larger than 1/4 inch with roof insulation.
- 2. Maximum elevation variation between boards at joints: 1/8 inch.
 - a. Cut and fit insulation boards where roof deck intersects vertical surfaces. Cut board 1/4 inch from vertical surface.

E Filler insulation requires two fasteners per/piece min. Filler size 18 inches in length or width, min.

F. Lay insulation in 48-inch-wide courses.

3.6 ROOF SYSTEM APPLICATION

A. Membrane Base Sheet(s) Installation:

- 1. Align roll with edge of roof in lowest area, melt bottom side of roll with propane torch evenly and sufficient for full adhesion, but not to the point that membrane is deformed or reinforcement is exposed. Align on one ply line of previously applied roll(s) and repeat above procedure.
- 2. After first ply has been installed, repeat procedure to install a second ply of specified sheet.

NOTE: *A glaze coat shall be installed prior to finish cap sheet to achieve complete and tenacious bonding to base plies.*

B Cap Sheet Installation:

- 1. Align specified sheet roll with edge of roof in lowest area, melt bottom side of roll with propane torch evenly and sufficient for full adhesion, but not to the point that membrane is deformed, or reinforcement is exposed.
- 2. Align on one ply line of previously applied roll(s). and repeat above procedure.
- 3. Repeat steps 1 & 2 until reaching the crest of roof.

C. Membrane installation further requirements:

- 1. Place ply sheets to ensure water will flow over or parallel to, but never against, exposed edges.
- 2. Ply should never touch ply even at roof edges, laps, tapered edge strips, and cants.
- 3. Apply heat weld evenly across entire width of roll for proper and tenacious weld to base plies and selvedge of prior sheet laid (Torch-applied cap only.)
- 4. Avoid excessive "bleed out" of hot weld melted asphalt at all overlap ply lines.
- 5. Avoid traffic on all newly installed membrane.
- 6. Overlap previous day's work 24 inches.

7. Lap ply sheet ends six inches. Stagger end laps twelve inches minimum.
8. Fit plies into roof drain rims, install metal flashing and finishing plies, secure clamping collars, and install domes.
9. Cut out fishmouths/side laps that are not completely sealed. Replace all sheets that are not fully and continuously bonded.
10. Roof is to be inspected and approved by representative from roof system warrantor before application of surfacing.

3.7 DAILY WATERSTOP/TIE-INS

- A. Remove debris from top ply of felt along termination. Width: 18 inches. Sweep clean.
- B. Envelope insulation with 18" inch wide #15 ply sheet. Adhere envelope to deck and insulation with a continuous 1/16" inch thick application of tie-off mastic. Glaze cut-off with surfacing mastic.
- C. Install "deadman" insulation staggerers.
 1. Extend roofing system at least twelve inches onto prepared area of adjacent roofing. Embed base ply to asphalt mastic. Seal edge with either:
 - a. Six inch wide fiberglass ply sheet embedded between continuous courses of tie-off mastic; remove voids and wrinkles.
 - b. Six inch wide reinforcing membrane embedded between alternate course of tie-off mastic.
 2. At beginning of next day's work remove temporary connection by cutting felts evenly along edge of existing roof system. Remove "deadman" insulation fillers.

3.8 PERMANENT WATERSTOP/TIE-INS

- A. Remove embedded gravel from top of ply of felt along termination. Width: 18 inches. Sweep clean. Prime swept surface with asphalt primer at 100 sq. ft. per gallon.
- B. Envelope insulation with 18 inch wide #15 ply sheet. Adhere envelope to deck and insulation with a continuous 1/16" inch thick application of tie-off mastic. Glaze cut-off with surfacing mastic. Install "deadman" insulation staggerers.
- C. Extend roofing system at least twelve inches onto prepared area of adjacent roofing. Embed base ply of system into asphalt mastic. Seal edge with either:
 1. Six inch wide fiberglass ply sheet embedded between continuous courses of mastic; remove voids and wrinkles.
 2. Six inch wide reinforcing membrane embedded between alternate courses of tie-off mastic.
 1. At beginning of next day's work remove temporary connection by cutting felts evenly along edge of existing roof system. Remove "deadman" insulation fillers.

3.9 FLASHINGS

- A. At parapet:
 1. Install wood blocking.
 2. Install continuous bent cleat on front and rear edges of wood blocking. Lap ends one

inch. Nail three inches o/c.

- a. Fabricate and install new coping cover. Connect coping sections with 1-1/4" inch high standing seam. Fold standing seam ends at 45° angle. Bend lower edges out 45° maximum to form drip edge. Attach cover sides to continuous cleat with 3/4" inch lock. At corners, form standing seam at miter.

C. At walls:

1. Prime vertical substrate w/asphalt primer at approximate rate of one gallon per/100sq. ft.
2. Provide wood blocking at flashing base.
3. Mechanically attach cant strip securely to wood blocking/wall. Install new roofing two inches beyond top edge of cant. Adhere sheeting completely to flashing substrate, cant, and roofing in a continuous 1/16 inch thick application of flashing adhesive to within two inches of mounting bar. Ensure complete bond and continuity without wrinkles or voids.
 - a. Modified rolled roofing sheet width: Sufficient that after being secured by metal components will extend at least six inches beyond toe of cant onto roofing.
4. Sandwich top edge of sheeting between two layers flashing tape. Secure top edge of sheeting to substrate with termination bar mechanically fastened eight inches o/c.
5. Mechanically fasten top edge of sheeting to substrate with one inch cap nails nailed eight inches o/c.
6. Seal roof edge of sheeting with reinforcing membrane embedded between alternate continuous courses of asphalt mastic.
7. Caulk top of bar. Provide watershed. Tool neatly.
8. Lower counterflashing to original position.

D. At curb flashings:

1. Provide cant around curb. Mechanically attach to deck/curb. Miter corners. Fastener density: Two per cant minimum
2. Install new roofing two inches beyond top edge of cant.
3. Adhere modified rolled sheeting completely to curb, cant, and roofing with flashing adhesive. Apply flashing adhesive 1/16 inch thick in a uniform and continuous manner.
 - a. Lap sheeting ends four inches.
 - b. Adhere ends with lap adhesive.
 - c. Adhere sheeting top to substrate with flashing tape.
 - d. Modified rolled sheeting width: Sufficient that after being installed to top of curb will extend at least six inches beyond toe of cant onto roofing.
 - e. Sandwich top edge of sheeting between two layers flashing tape. Secure top edge of sheeting to ductwork with termination bar; mechanically fasten 8" in. o.c.
 - f. Mechanically attach top edge of sheeting to curb with termination bar. Fasteners: Eight inches o/c.
 - g. Wipe top of bar clean with metal cleaner. Prime metal surface to receive sealant with metal primer. Allow to dry.
 - h. Caulk top of bar. Provide watershed. Tool neatly.
 - i. Lower counter flashing.
 - j. Seal roof edge of sheeting with reinforcing membrane embedded between alternate continuous courses of asphalt mastic.

B. At expansion joint(s) *(If applicable)*:

1. Extend new roofing to top edge of cant. Nail six (6) inches o/c. w/one (1) inch cap nails.

2. Install vinyl water barrier over joint opening. Allow barrier to drape four (4) inches within joint opening. Nail both sides of barrier four (4) inches o/c.
3. Insert fiberglass batt insulation into expansion joint opening; fill entire opening.
4. Install modified base flashing sheet described in general flashing requirements section.
5. Sandwich top edge of sheeting between two (2) layers flashing tape.
6. Secure top edge of sheeting to substrate with one inch cap nails nailed eight (8") o/c.
7. Provide new expansion joint cover according to manufacturer's directions centered over expansion joint opening:
 - c. Set flange into mastic. Nail flange to wood blocking eight (8) inches o/c., staggered.
 - d. Splice sections; form intersections and terminations; follow Mfg's instructions.

F. At plumbing vents:

1. Install new roofing.
2. Trowel flashing adhesive to roof surface 15 inches wide, 1/16 inch thick. Extend flashing adhesive up plumbing vent two inches.
3. Install prefabricated stack flashing over projection. Ensure base is securely embedded
4. Tighten clamp.
5. Seal base into new roofing with reinforcing membrane embedded between alternate courses of asphalt mastic.
6. Caulk stack flashing top. Provide watershed. Tool neatly.

G. At small pipes & conduits:

1. Remove existing pitch pans.
2. Install wood blocking.
3. Provide wood blocking/tapered edge. Firmly butt edge strip to blocking; miter corners. Mechanically attach edge strip and blocking to deck.
4. Install roofing system onto wood blocking.
5. Apply 1/16 inch uniformly thick layer of asphalt mastic to surface receiving metal flange.
6. Fabricate pitch pan from galvanized steel. Sides: Four inches high, hemmed at top edge. Flange: Four inches wide, completely around periphery. Clearance between projection and pitch pan: Two inches. Set flange in mastic.
7. Fabricate and install galvanized steel umbrella with drawband over pitch pan. Tighten drawband.
8. Wipe clean top of umbrella and projection with metal cleaner. Prime w/metal primer.
9. Caulk stack/sheet metal interface. Provide watershed. Tool neatly.

3.10 NEW DRAINS

A. Preparation:

1. Prepare roof surface within 24" inch radius of drain.
2. Remove flashing collar. Clean. If broken, provide new collar.
3. Prime prepared area with asphalt primer; do not puddle. Allow to dry.
4. Install one course flashing tape to drain flange perimeter.
5. Provide 36" x 36" inch modified rolled sheeting reinforcement to drain.
 - a. Center sheeting over drain.
 - b. Adhere sheeting to surface with continuous application of flashing adhesive.
 - c. Remove wrinkles/entrapped air.
6. Install second course flashing tape where flashing collar will be seated.

7. Re-clamp flashing collar to drain. If bolts are broken, drill and re-tap. If ladder clamps are installed, provide new clamps.
8. Caulk perimeter of flashing collar. Tool neatly.
9. Cut/remove excess sheeting within drain.
10. Seal sheeting edge with reinforcing membrane embedded between alternate continuous courses of asphalt mastic.
12. Provide three course 36" x 36" inch reinforcement to drain.
13. Embed one ply reinforcement membrane to primed surface in alternate continuous applications of asphalt mastic; leave no voids.
15. Re-clamp flashing collar to drain in bed of mastic. If bolts are broken, drill and re-tap. If ladder clamps are installed, provide new clamps. Remove excess membrane within drain.

3.12 ADJUSTING AND CLEANING

A. Repair of Deficiencies

1. Installations or details noted as deficient during Final Inspection must be repaired and corrected by applicator and made ready for re-inspection, within five (5) working days.

B. Clean-Up

1. Immediately upon completion, roof membrane and flashing surfaces shall be cleaned of debris.

END OF SECTION 075216

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Manufactured through-wall flashing with counterflashing.
 - 2. Manufactured reglets.
 - 3. Formed low-slope roof sheet metal fabrications.
 - 4. Formed wall sheet metal fabrications.
 - 5. Formed equipment support flashing.

- B. Related Requirements:

- 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 07 Sections "Built-Up Roofing (Torch-Applied) Modified Rolled Roofing" for installation of sheet metal flashing and trim integral with roof systems.
 - 3. Division 07 Section "Roof Specialties" for copings.
 - 4. Division 07 Section "Roof Accessories" for set-on-type curbs, equipment supports, vents, and other manufactured roof accessory units.

1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

- B. Shop Drawings: For sheet metal flashing and trim.

- 1. Include plans, elevations, sections, and attachment details.

2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. SPRI Wind Design Standard: Manufacture and install roof edge flashings tested according to SPRI ES-1 and capable of resisting the following design pressure:

1. Design Pressure: As indicated on Drawings.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Stainless-Steel Sheet: ASTM A 240, dead soft, fully annealed; with smooth, flat surface.

1. Finish: 2B (bright, cold rolled).

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.

- a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
- b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.

2. Fasteners for Stainless-Steel Sheet: Series 300 stainless steel.

C. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

- G. Bituminous Coating: Cold-applied asphalt emulsion according to ASTM D 1187.
- H. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.4 MANUFACTURED SHEET METAL FLASHING AND TRIM

- A. Through-Wall, Ribbed, Sheet Metal Flashing: Manufacture through-wall sheet metal flashing for embedment in masonry, with ribs at 3-inch intervals along length of flashing to provide integral mortar bond. Manufacture through-wall flashing with snaplock receiver on exterior face to receive counterflashing.
 - 1. Stainless Steel: 0.016 inch thick.
- B. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions.
 - 1. Material: Stainless steel, 0.019 inch thick.
 - 2. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 - 3. Accessories:
 - a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
 - b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
 - 4. Finish: Mill.

2.5 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 2. Obtain field measurements for accurate fit before shop fabrication.
 - 3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 4. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal to provide for proper installation of elastomeric sealant according to cited sheet metal standard.
- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- G. Seams: Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.

2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch- long, but not exceeding 12-foot- long sections. Furnish with 6-inch- wide, joint cover plates. Shop fabricate interior and exterior corners.
1. Joint Style: Overlapped, 4 inches wide.
 2. Fabricate with scuppers spaced 10 feet apart, unless otherwise indicated, to dimensions required with 4-inch- wide flanges and base extending 4 inches beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper.
 3. Fabricate from the Following Materials:
 - a. Stainless Steel: 0.019 inch thick.
- B. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
1. Stainless Steel: 0.019 inch thick.
- C. Flashing Receivers: Fabricate from the following materials:
1. Stainless Steel: 0.016 inch thick.
- D. Roof-Penetration Flashing: Fabricate from the following materials:
1. Stainless Steel: 0.019 inch thick.
- E. Roof-Drain Flashing: Fabricate from the following materials:
1. Stainless Steel: 0.016 inch thick.

2.7 WALL SHEET METAL FABRICATIONS

- A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch- long, but not exceeding 12-foot- long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch- high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.016 inch thick.
- B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch- high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.016 inch thick.

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

- A. Equipment Support Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.019 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
 1. Verify compliance with requirements for installation tolerances of substrates.
 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 1. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 3. Space cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
 4. Install exposed sheet metal flashing and trim with limited oil canning, and free of buckling and tool marks.
 5. Torch cutting of sheet metal flashing and trim is not permitted.
 6. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
 2. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
 1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
 1. Do not use torches for soldering.
 2. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
 3. Stainless-Steel Soldering: Tin edges of uncoated sheets, using solder for stainless steel and acid flux. Promptly remove acid flux residue from metal after tinning and soldering. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.3 ROOF FLASHING INSTALLATION

- A. General: Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard. Provide concealed fasteners where possible, and set units true to line, levels, and slopes. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
- C. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless-steel draw band and tighten.
- D. Counterflashing: Coordinate installation of counterflashing with installation of base flashing. Insert counterflashing in reglets or receivers and fit tightly to base flashing. Extend counterflashing 4 inches over

base flashing. Lap counterflashing joints minimum of 4 inches. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.

- E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

3.4 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Through-Wall Flashing: Installation of through-wall flashing is specified in Division 04 Sections for "Concrete Unit Masonry." and "Exterior Stone Cladding."
- C. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

3.5 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.6 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.7 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.
- D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended by sheet metal flashing and trim manufacturer. Maintain sheet metal flashing and trim in clean condition during construction.
- E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 076200

SECTION 077100 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Copings.
 - 2. Roof-edge specialties.
 - 3. Roof-edge drainage systems.
- B. Related Sections:
 - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
 - 2. Division 07 Section "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.
- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.5 FIELD CONDITIONS

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg. F, ambient; 180 deg. F, material surfaces.

2.2 EXPOSED METALS

- A. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.
 - 1. Surface: Smooth, flat finish.
 - 2. Exposed Coil-Coated Finishes: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.3 CONCEALED METALS

- A. Aluminum Sheet: ASTM B 209, alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.
- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.

2.4 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
 - 1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.
 - 2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
 - 3. Acceptable Products: Subject to compliance with requirements, available products that may be incorporated into the Work include the following or equal:
 - a. Carlisle Coatings & Waterproofing; CCW WIP 300HT.
 - b. Grace Construction Products, a unit of W. R. Grace & Co.; Ultra.
 - c. Henry Company; Blueskin PE200 HT.
 - d. Metal-Fab Manufacturing, LLC; MetShield.
 - e. Owens Corning; WeatherLock Metal High Temperature Underlayment.

2.5 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
 - 1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
 - 2. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.
- C. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
- D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- E. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.
- F. Gutter Liner: EPDM; ASTM D 4637, Type I, nonreinforced sheet. Subject to compliance with requirements, provide the following or equal:
 - 1. Acceptable Manufacturer: Firestone Building Products.
 - 2. Thickness: 90 mils nominal.
 - 3. Exposed Face Color: Black.

2.6 COPINGS

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet, concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
 - 1. Aluminum: 0.050 inch thick.
 - 2. Warranty:
 - a. Materials shall be free of defects in material and workmanship for a period of 20 years from the date of Final Completion.
 - b. Finish: High-Performance Organic Coating Finish; color as selected by Architect.
 - 3. Corners: Factory mitered and continuously welded.
 - 4. Coping-Cap Attachment Method: Snap-on, fabricated from coping-cap material.
 - a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches wide, with integral cleats.

2.7 ROOF-EDGE SPECIALTIES

- A. One-Piece Aluminum Fascia Gravel Stops: Manufactured, one-piece, metal gravel stop in section lengths not exceeding 12 feet, with a horizontal flange and vertical leg, drain-through fascia terminating in a drip edge, and concealed splice plates of same material, finish, and shape as gravel stop. Provide matching corner units.
 - 1. Aluminum: 0.050 inch thick.

2. Fabricate to sizes and profiles as indicated. Provide continuous water dam, spring clip, fascia cover, concealed splice plates and welded prefabricated corner units.
3. Gravel stop shall be tested for wind uplift resistance per ANSI/SPRI ES-1
4. Warranty:
 - a. Materials shall be free of defects in material and workmanship for a period of 20 years from the date of Final Completion.
 - b. Finish: High-Performance Organic Coating Finish.
5. Corners: Factory mitered and continuously welded.

2.8 ROOF-EDGE DRAINAGE SYSTEMS

- A. Gutters: Manufactured in uniform section lengths, with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish expansion joints, and expansion-joint covers.
 1. Gutter Style: K style, 6-inch.
 2. Aluminum: 0.050 inch thick.
 - a. Gutter Supports: Gutter brackets with finish matching the gutters.
- B. Downspouts: Plain round with mitered elbows. Furnish wall brackets of same material and finish as downspouts, with anchors.
 1. Formed Aluminum: 0.040 inch thick, 3-inch diameter.
 2. Extruded Aluminum: 0.125 inch thick.
- C. Splash Pans: Pre-cast concrete.

2.9 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Aluminum Extrusion Finishes:
 1. Fluoropolymer 3-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.
 - a. Color and Gloss: As selected by Architect from manufacturer's full range of choices for color and gloss or as required to match existing.
 2. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

- A. Self-Adhering Sheet Underlayment: Install wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water. Overlap edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

3.3 INSTALLATION, GENERAL

- A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 - 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Provide uniform, neat seams with minimum exposure of solder and sealant.
 - 3. Install roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 - 4. Torch cutting of roof specialties is not permitted.
 - 5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Coat concealed side of uncoated aluminum roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of self-adhering, high-temperature sheet underlayment.
 - 3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
 - 1. Space movement joints at a maximum of 12 feet with no joints within 18 inches of corners or intersections unless otherwise shown on Drawings.

2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

- D. Fastener Sizes: Use fasteners of sizes that will penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Seal joints with elastomeric sealant as required by roofing-specialty manufacturer.
- F. Seal joints as required for watertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

3.4 COPING INSTALLATION

- A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
 1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at 30-inch centers.

3.5 ROOF-EDGE SPECIALITIES INSTALLATION

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.6 ROOF-EDGE DRAINAGE SYSTEM INSTALLATION

- A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.
- B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 12 inches apart. Attach ends with rivets and seal with sealant to make watertight. Slope to downspouts.
 1. Gutter Liner: Adhesive application in accordance with manufacturer's recommendations.
 - a. Apply bonding adhesive to gutter and underside of EPDM membrane at rate required by manufacturer and allow to partially dry before installing membrane.
 - b. Apply EPDM membrane with laps shingled with slope of gutter.
- C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c.
- D. Splash Protection: Install where downspouts discharge on low-slope roofs.
 1. Blocks: Precast concrete splash blocks set on walkway pads.

3.7 CLEANING AND PROTECTION

- A. Clean and neutralize flux materials. Clean off excess solder and sealants.
- B. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- C. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077100

SECTION 077140 - FACTORY FORMED FASCIA / GRAVEL STOP SYSTEM

1. PART ONE - GENERAL

1.1. RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents and drawings.

1.2. SUMMARY:

- A. Work included: Furnishing and installing factory fabricated and finished gravel stop systems.
- B. Roof Areas covered under this section: Metal Deck Areas

1.3. REFERENCES:

- A. Flashing system must be tested and have certification by Factory Mutual for wind uplift. (Consult manufacturer/supplier on applicable sizes and gauges).
- B. Flashing system must meet ANSI/SPRI ES-1-98 design test requirements for the location, height and use of the building.

1.4. SUBMITTALS:

- A. Design Pressures: Provide documentation that the product has been tested to withstand the following:
 - 1 Design Pressure Horizontal (outward pressure) 70 psf
 - 2 Design Pressure Vertical (upward pressure) 135 psf
- B. Product Data: Provide specified product and installation data for all materials.
- C. Shop drawings: Show profiles, joining method, location of accessory items, anchorage and flashing details, adjacent construction interface, and dimensions.
- D. Samples: Available on request; sized to adequately represent material.
- E. Submit Special Warranty and manufacturer/supplier's performance certificates.
- F. Submit Product Take Off Sheets: to adequately represent field dimensions and conditions

1.1. QUALITY ASSURANCE:

- A. Certificates: Warrantor's certificate of FM and ANSI requirements.

1.2. PRODUCT HANDLING:

- A. All materials shall arrive in the manufacturer/supplier's original sealed, labeled containers.
- B. Store materials in a dry, protected, well-vented area. Report damaged material immediately to delivering carrier and manufacturer/supplier.
- C. Remove protective plastic surface film after installation.

1.3. SUBSTITUTIONS:

- A. Shall be accepted only from bidding contractors a minimum of 10 working days before bid due date; must meet performance standards.

1.4. JOB CONDITIONS:

- A. Verify that other trades are complete before mounting coping covers.
- B. Mounting surfaces to be straight, secure; substrates of proper width.
- C. Refer to construction documents, shop drawings and fascia installation instructions.
- D. Coordinate installation with roof membrane warrantor's instructions before starting.
- E. Installation contractor is responsible for actual field measurements.

1.5. FASCIA/ GRAVEL STOP WARRANTY:

- A. Related section: SECTION 01740 - WARRANTIES
- B. Upon project completion, acceptance by building owner and payment of all materials and fees, the specified system warranty will be issued.

2. PART TWO - PRODUCTS

2.1. GRAVEL STOP SYSTEM:

- A. Fascia/ gravel stop System: Shall be a three-part assembly designed for built-up or modified bitumen roofs described as SR Storm Defender 5000 by S.R.Products, consisting of continuous galvanized steel waterdam, exterior fascia and continuous compression clamp.
- B. Formed metal fascia:
 - 1 Metal Type: .050" Kynar 500 Coated Aluminum (Color to be approved by Owner).
 - 2 Metal Size: Sufficient to extend 1" below bottom nailer.
- C. Fascia: Standard 12'-0" lengths with matching concealed joint splice plates.
- D. Waterdam cant: Std. 12'-0" length of commercial type G90 galv. steel.
- E. Compression clamp: Formed .032" aluminum 12'-0" lengths
- F. Stainless Steel Fasteners: As recommended by the manufacturer/supplier per substrate application or supplied by manufacture.

2.2. METAL COPING SYSTEM:

- A. SR Storm Defender Coping 100 by S.R.Products, Inc.Youngstown, OH or approved equal.
 - 1 Fascia width: 14' – 22" stretch-out.(Type III 0.050thk. / V.I.F.)
 - 2 Finish: Kynar 500 Coated Aluminum (Color as selected by Owner shall be standard color.
 - 3 Flashing Base Ply Sheet Membrane width: Sufficient to extend onto horizontal roofing six (6) inches minimum..
 - 4 Flashing Cap Sheet width: Sufficient to extend onto horizontal roofing nine (9) inches min.

2.3. ACCESSORIES:

- A. Corners, fascia sumps, spillouts, ledge caps, downspouts, or other special fabrications shall be fabricated by the roof edging manufacturer/supplier.
- B. Welding the assembly shall be used to maintain watertight integrity.

3. PART THREE - EXECUTION

3.1. INSPECTION:

- A. Edging installation shall not disrupt other trades. Contractor to verify that substrate is dry, clean and free of foreign matter. Correct defects before proceeding.

3.2. INSTALLATION - FASCIA GRAVEL STOP SYSTEM:

- A. Follow warrantor's installation instructions to insure proper design and installation.
- B. Submit design drawings to Architect for approval before fabrication.
- C. Installer shall check as-built condition and approve specified details before fabrication.
- D. Installer shall furnish mechanical fasteners to attach water dam cant consistent with warrantor's instructions; suitable to substrates.
- E. Crimp drip edges every 18" O. C. to engage fascia cover for wind uplift.

3.3. INSTALLATION – METAL COPING SYSTEM:

- A. Follow warrantor's installation instructions to insure proper design and installation.
- B. Submit design drawings to Architect for approval before fabrication.
- C. Installer shall check as-built condition and approve specified details before fabrication.
- D. Installer shall furnish mechanical fasteners to attach water dam cant consistent with warrantor's instructions; suitable to substrates.
- E. Apply pressure to snap-fit metal coping, over unexposed 9" wide splice plates, w/prefabricated continuous anchor clips achieving sound attachment.

END OF SECTION 077140

SECTION 077200 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Equipment supports.
 - 2. Pipe and duct supports.
 - 3. Preformed flashing sleeves and vent stack collars.
- B. Related Sections:
 - 1. Division 07 Section "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.
 - 2. Division 07 Section "Roof Specialties" for manufactured fasciae, copings, gravel stops, gutters and downspouts, and counterflashing.
 - 3. Division 23 Section "HVAC Power Ventilators" for power roof-mounted ventilators.

1.3 COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.
- B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For roof accessories. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.
- C. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

D. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

E. Warranty: Sample of special warranty.

1.5 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

2.2 EQUIPMENT SUPPORTS

A. Equipment Supports: Internally reinforced perimeter metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded corner joints, integral metal cant or stepped integral metal cant raised the thickness of roof insulation, and integrally formed structure-mounting flange at bottom.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Material: Galvanized 18 gauge-steel sheet.

D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.
2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
3. Fabricate equipment supports to minimum height of 12 inches above roofing surface unless otherwise indicated.

2.3 PIPE AND DUCT SUPPORTS

A. Adjustable-Height Roller-Bearing Pipe Supports: Polycarbonate pipe stand base, pipe support, and roller housing, with stainless-steel threaded rod designed for adjusting support height, accommodating up to 18 inch diameter pipe or conduit; with provision for pipe retainer and with manufacturer's support pad or deck plate as recommended for penetration-free installation over roof membrane type; as required for quantity of pipe runs and sizes.

- B. Duct Supports: Extruded-aluminum, urethane-insulated supports, 2 inches in diameter; with manufacturer's recommended hardware for mounting to structure or structural roof deck.

- 1. Finish: Manufacturer's standard.

2.4 PREFORMED FLASHING SLEEVES AND VENT STACK COLLAR

- A. Exhaust Fan Vent Curb/Flashing Sleeve: Double-walled metal flashing sleeve or boot, insulation filled, with integral deck flange, 12 inches high, with removable metal hood and slotted or perforated metal collar.

- 1. Metal: Stainless steel sheet, type 304, 22 gauge.
 - 2. Diameter: As indicated on Drawings.
 - 3. Finish: Manufacturer's standard.

- B. Vent Stack/Pipe Flashing Sleeve: Metal flashing sleeve, uninsulated, with integral deck flange.

- 1. Metal: Stainless steel sheet, type 304, 22 gauge.
 - 2. Diameter: As indicated on Drawings.
 - 3. Finish: Manufacturer's standard.

- C. Vent Stack/Pipe Flashing Collar: Metal flashing vent stack collar with hemmed turn down edges and stainless-steel fastening band.

- 1. Metal: Stainless steel sheet, type 304, 24 gauge thick.
 - 2. Height: 7 inches.
 - 3. Diameter: As indicated on Drawings.
 - 4. Finish: Manufacturer's standard.

- D. Pipe Portal Cover & Cap on roof curb:

- 1. Curb Cover: ABS plastic cover.
 - 2. EPDM Cap: EPDM Rubber cap made for 1 pipe penetration, in size as indicated on drawings.
 - 3. Metal: Stainless steel clamp.
 - 4. Roof Curb: Insulated prefabricated roof curb.

2.5 METAL MATERIALS

- A. Aluminum Sheet: ASTM B 209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

- 1. Mill Finish: As manufactured.

- B. Aluminum Extrusions and Tubes: ASTM B 221, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

- C. Stainless-Steel Sheet and Shapes: ASTM A 240 or ASTM A 666, Type 304.

2.6 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

- B. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.
- C. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.
- D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.
- E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.
- F. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.7 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install roof accessories according to manufacturer's written instructions.
 - 1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
 - 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
 - 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
 - 3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.
- C. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.
- D. Pipe Support Installation: Comply with MSS SP-58 and MSS SP-89. Install supports and attachments as required to properly support piping. Arrange for grouping of parallel runs of horizontal piping, and support together.
 - 1. Pipes of Various Sizes: Space supports for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
- E. Preformed Flashing-Sleeve Installation: Secure flashing sleeve to roof membrane according to flashing-sleeve manufacturer's written instructions; flash sleeve flange to surrounding roof membrane according to roof membrane manufacturer's instructions.
- F. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A 780.
- B. Clean exposed surfaces according to manufacturer's written instructions.
- C. Clean off excess sealants.
- D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.

1.2 ACTION SUBMITTALS

- A. Samples: For each kind and color of joint sealant required.

1.3 INFORMATIONAL SUBMITTALS

- A. Product test reports.
- B. Sample warranties.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM C 1021 to conduct the testing indicated.

1.5 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:
 - 1. Architectural sealants shall have a VOC content of 250 g/L or less.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
- B. 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. Dow Corning Corporation.
 - 2. Schnee-Morehead, Inc., an ITW company.
 - 3. Sherwin-Williams Company (The).

2.3 JOINT-SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) Type O (open-cell material) Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. 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. BASF Construction Chemicals - Building Systems.
 - 2. Construction Foam Products; a division of Nomaco, Inc.

2.4 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove laitance and form-release agents from concrete.
 - 2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- C. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

END OF SECTION 079200

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Acoustical panels and exposed suspension systems for ceilings.
- A. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.
- B. Related Sections:
 - 1. Division 09 Section "Linear Metal Ceilings" for acoustical metal ceilings.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: Set of full-size samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch-long Samples of each type, finish, and color.
- C. Linear Acoustical Panels: Submit coordinated MEP / panel location drawing for approval prior to panel installation.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each acoustical panel ceiling, for tests performed by manufacturer and witnessed by a qualified testing agency.
- B. Evaluation Reports: For each acoustical panel ceiling suspension system and anchor and fastener type, from ICC-ES.

1.5 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
 - 2. Smoke-Developed Index: 50 or less.

1.1 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.2 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.
 - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.4 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Products: The Basis-of-Design for acoustical panel ceilings is shown on the Plans. Subject to compliance with requirements, provide the Basis-of-Design products or equal.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations:
 - 1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
 - 2. Suspension System: Obtain each type from single source from single manufacturer.
- B. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system from single source from single manufacturer.
- C. Glass-Fiber-Based Panels: Made with binder containing no urea formaldehyde.
- D. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.
- E. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.3 ACOUSTICAL PANELS (ACT1)

- A. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
 - 1. Type and Form: Type IV, mineral base with membrane-faced overlay; Form 2, water felted; with vinyl overlay on face.
- B. Color: White.
- C. Thickness: As indicated on Finish Schedule on Drawings.

2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.
 - 1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.
- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - 1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.

- a. Type: Postinstalled expansion anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.
- C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.
 3. Nickel-Copper-Alloy Wire: ASTM B 164, nickel-copper-alloy UNS No. N04400.
 4. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch-diameter wire.
- D. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches o.c. on all cross tees.
- E. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.

2.5 METAL SUSPENSION SYSTEM (SS1, SS2)

- A. Narrow-Face, Capped, Double-Web, Steel Suspension System (SS1): Main and cross runners roll formed from cold-rolled steel sheet, pre-painted, electrolytic zinc-coated or hot-dip galvanized according to ASTM A 653/653M, G30 coating designation, with prefinished, cold-rolled, 9/16-inch-wide sheet metal caps on flanges.
1. Structural Classification: Heavy-duty system.
 2. End Condition of Cross Runners: Override (stepped) type.
 3. Face Design: Flat, flush.
 4. Cap Material: Galvanized steel.
 5. Cap Finish: Painted white.
- B. Wide-Face, Capped, Double-Web, Steel Suspension System (SS2): Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
1. Structural Classification: Heavy-duty system.
 2. End Condition of Cross Runners: Override (stepped) type.
 3. Face Design: Flat, flush.
 4. Cap Material: Cold-rolled steel.
 5. Cap Finish: Painted white.
- C. Linear Acoustic Panel Hanging Suspension System (SS3): Manufacturer's standard suspension system comprised of top end connectors for attachment to structural deck; aircraft type cables and fork gripper for attachment to panel.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Manufacturers: Subject to compliance with requirements provide edge moldings from same manufacturer as suspension system.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
 - 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 - 3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
- C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements and the following:
 - 1. Aluminum Alloy: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of aluminum extrusions complying with ASTM B 221 for Alloy and Temper 6063-T5.
 - 2. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C 635/C 635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.7 ACOUSTICAL SEALANT

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Acoustical Sealant for Exposed and Concealed Joints: Provide the following or equal:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
- B. Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 ACOUSTICAL PANEL INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 - 6. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 - 7. Do not attach hangers to steel deck tabs.
 - 8. Space hangers not more than 48 inches o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 - 9. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.

1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- E. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 2. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
 4. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.

3.4 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 099000 - INTERIOR, EXTERIOR AND HIGH PERFORMANCE PAINTS AND COATINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interior paint and coating commercial systems including surface preparation.
- B. Exterior paint and coating systems including surface preparation.

1.2 REFERENCES

- A. Steel Structures Painting Council (SSPC):
 - 1. SSPC-SP 1 - Solvent Cleaning.
 - 2. SSPC-SP 2 - Hand Tool Cleaning.
 - 3. SSPC-SP 3 - Power Tool Cleaning.
 - 4. SSPC-SP5/NACE No. 1, White Metal Blast Cleaning.
 - 5. SSPC-SP6/NACE No. 3, Commercial Blast Cleaning.
 - 6. SSPC-SP7/NACE No. 4, Brush-Off Blast Cleaning.
 - 7. SSPC-SP10/NACE No. 2, Near-White Blast Cleaning.
 - 8. SSPC-SP11, Power Tool Cleaning to Bare Metal.
 - 9. SSPC-SP12/NACE No. 5, Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.
 - 10. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.
- B. Material Safety Data Sheets / Environmental Data Sheets: Per manufacturer's MSDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.
- C. California Department of Public Health (CDPH):
 - 1. CDPH v1.1-2010 and V1.2-2017

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: For each paint system indicated, including.
 - 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. Cautions for storage, handling and installation.
- C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors, and sheens available.
- D. Verification Samples: For each finished product specified, submit samples that represent the actual product, color, and sheen.

- E. Coating Maintenance Manual: Upon conclusion of project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams, "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Owner will select from standard products, colors, and sheens available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish surfaces for verification of products, colors, and sheens.
 - 2. Finish area designated by Architect.
 - 3. Provide samples that designate primer and finish coats.
 - 4. Compatibility and Adhesion: Check after one week of drying and curing by testing in accordance with ASTM D3359; Adhesion by tape test. If the coating system is incompatible, additional surface preparation up to and including complete removal may be required.
 - 5. Do not proceed with remaining work until the Architect approves the mock-up.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
 - 1. Product name, and type (description).
 - 2. Application and use instructions.
 - 3. Surface preparation.
 - 4. VOC content.
 - 5. Environmental handling.
 - 6. Batch date.
 - 7. Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.6 PROJECT 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 recommended limits.

1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and, in the quantities, described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Sherwin-Williams, which is located at: 101 Prospect Ave.; Cleveland, OH 44115; ASD Toll Free Tel: 800-524-5979; Tel: 216-566-2000; Fax: 440-826-1989; Email: request info [specifications@sherwin.com](mailto:info@specifications@sherwin.com); Web: www.swspecs.com.
- B. Or Equal

2.2 APPLICATIONS/SCOPE

- A. Interior Paint and Coating Commercial Systems:
 - 1. Metal: Structural steel, joists, trusses, beams, partitions, and similar items.
 - 2. Drywall: Drywall board, Gypsum board.
- B. Exterior Paint and Coating Systems:
 - 1. Metal: Miscellaneous iron, ornamental iron, ferrous metal.

2.3 PAINT MATERIALS - GENERAL

- A. Paints and Coatings:
 - 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
 - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufacturer's product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use a primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Finish Schedule for paint colors, and as selected.
- E. LEED Requirements: LEED V4 and V4.1 EQ Credit: Indoor Environmental Quality-Low Emitting Materials.

2.4 INTERIOR PAINT AND COATING COMMERCIAL SYSTEMS

- A. Metal: 1 Steel Door Frames
 - 1. Alkyd Systems; Waterbased:
 - a. Semi-Gloss Finish:
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils. wet, 2.0 mils. dry per coat).
 - 2) 2nd Coat: S-W Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series.
 - 3) 3rd Coat: S-W Pro Industrial Waterbased Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series (4.0-5.0 mils. wet, 1.4 - 1.7 mils. dry per coat).
- B. Drywall: Walls, Gypsum Board
 - 1. Latex Systems:
 - a. Eg-Shel / Satin Finish:
 - 1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils. wet, 1.5 mils. dry per coat).
 - 2) 2nd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series.
 - 3) 3rd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series (4 mils. wet, 1.7 mils. dry per coat).

2.5 EXTERIOR PAINT AND COATING SYSTEMS

- A. Metal: Miscellaneous. Ferrous Metal.
 - 1. Latex Systems:
 - a. Semi-Gloss Finish:
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0-10.0 mils. wet, 1.8-3.6 mils. dry per coat).
 - 2) 2nd Coat: S-W Pro Industrial Acrylic Semi-Gloss, B66-650.
 - 3) 3rd Coat: S-W Pro Industrial Acrylic Semi-Gloss, B66-650 (2.0-4.0 mils. dry per coat).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until the substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

3.2 SURFACE PREPARATION

- A. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint, or other contamination to ensure good adhesion.
 - 1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may

- damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.
2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply solution and scrub the mildewed area. Allow solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
 3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
 4. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface, and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.
- B. Aluminum: Remove all oil, grease, dirt, oxide, and other foreign material by cleaning per SSPC-SP1, Solvent Cleaning.
- C. Block (Cinder and Concrete): Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75 degrees F (24 degrees C). The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.
- D. Concrete, SSPC-SP13 or NACE 6: This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
- E. Cement Composition Siding/Panels: Remove all surface contamination by washing with an appropriate cleaner, rinse thoroughly and allow to dry. Existing peeled or checked paint should be scraped and sanded to a sound surface. Pressure clean, if needed, with a minimum of 2100 psi pressure to remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, and peeling or defective coatings. Allow the surface to dry thoroughly. The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments.
- F. Copper and Stainless Steel: Remove all oil, grease, dirt, oxide, and other foreign material by cleaning per SSPC-SP 2, Hand Tool Cleaning.
- G. Exterior Composition Board (Hardboard): Some composition boards may exude a waxy material that must be removed with a solvent prior to coating. Whether factory primed or

unprimed, exterior composition board siding (hardboard) must be cleaned thoroughly and primed with an alkyd primer.

- H. Drywall - Exterior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth, and all dust removed prior to painting. Exterior surfaces must be spackled with exterior grade compounds.
- I. Drywall - Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth, and all dust removed prior to painting.
- J. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply to a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP16 is necessary to remove these treatments.
- K. Plaster: Must be allowed to dry thoroughly for at least 30 days before painting unless the products are designed to be used in high pH environments. Room must be ventilated while drying; in cold, damp weather, rooms must be heated. Damaged areas must be repaired with appropriate patching material. Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.
- L. Steel: Structural, Plate, And Similar Items: Should be cleaned by one or more of the surface preparations described below. These methods are used throughout the world for describing methods for cleaning structural steel. Visual standards are available through the Society of Protective Coatings. A brief description of these standards together with numbers by which they can be specified follow.
 - 1. Solvent Cleaning, SSPC-SP1: Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.
 - 2. Hand Tool Cleaning, SSPC-SP2: Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Beforehand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 - 3. Power Tool Cleaning, SSPC-SP3: Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 - 4. White Metal Blast Cleaning, SSPC-SP5 or NACE 1: A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
 - 5. Commercial Blast Cleaning, SSPC-SP6 or NACE 3: A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease,

- dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
6. Brush-Off Blast Cleaning, SSPC-SP7 or NACE 4: A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.
 7. Power Tool Cleaning to Bare Metal, SSPC-SP11: Metallic surfaces that are prepared according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.
 8. Near-White Blast Cleaning, SSPC-SP10 or NACE 2: A Near White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
 9. High- and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials: SSPC-SP12 or NACE 5: This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.
 10. Water Blasting, SSPC-SP12/NACE No. 5: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.
- M. Vinyl Siding, Architectural Plastics, EIFS and Fiberglass: Clean vinyl siding thoroughly by scrubbing with a warm, soapy water solution. Rinse thoroughly. Do not paint vinyl siding with any color darker than the original color unless the paint system features Sherwin-Williams VinylSafe technology. Painting with darker colors that are not Sherwin-Williams VinylSafe may cause siding to warp. Follow all painting guidelines of the vinyl manufacturer when painting. Only paint properly installed vinyl siding. Deviating from the manufacturer's painting guidelines may cause the warranty to be voided.
- N. Stucco: Must be clean and free of any loose stucco. If recommended procedures for applying stucco are followed, and normal drying conditions prevail, the surface may be painted in 30 days. The pH of the surface should be between 6 and 9 unless the products are designed to be used in high pH environments such as Loxon.
- O. Wood: Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks

must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

3.3 INSTALLATION

- A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply it to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.
- F. Regardless of the number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

SECTION - 14 24 01 HYDRAULIC PASSENGER ELEVATOR MODERNIZATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes modernization of hydraulic elevators as follows:

1. Three (3) passenger elevator(s), Cars PE-1, PE-2, SE-3]

B. Products Installed but Not Furnished Under This Section:

1. Car interior finishes. ALTERNATE
2. Car flooring. ALTERNATE

1.2 DEFINITIONS

A. Technical terms used are defined in the latest edition of the Safety Code for Elevators and Escalators, ASME A17.1. or in this section.

B. See SECTION 00 80 00 – SUPPLEMENTAL CONDITIONS

1.3 WORK INCLUDED

A. SUMMARY OF WORK

FINAL CLEANING

B. See Section 00 80 00, Supplemental Conditions, for contractual requirements governing site cleaning. As a minimum:

1. Elevator hoistways and all equipment therein shall be cleaned and left free of rust, filings, welding slag, rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust, including walls, building beams, sill ledges, and hoistway divider beams.
2. Care shall be to not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
3. Clean down surfaces and areas which require final painting and finishing work. Cleaning includes removal of rubbish, broom cleaning of floors, removal of any loose plaster or mortar, dust, and other extraneous materials from finish surfaces, and surfaces which will remain visible after the work is complete.

CONSULTANT'S FINAL OBSERVATION AND REVIEW REQUIREMENTS

- C. Review procedure shall apply for individual elevators, portions of groups of elevators, and completed groups of elevators accepted on an interim basis, or elevators and groups of elevators completed, accepted, and placed in operation.
- D. Contractor shall perform review and evaluation of all aspects of its work prior to requesting Consultant's final review. Work shall be considered ready for Consultant's final contract compliance review when all Contractor's tests are complete, all deficiencies noted by the AHJ have been rectified, and all elements of work or a designated portion thereof are in place and elevator or group of elevators are deemed ready for service as intended.

- E. Contractor shall perform review and evaluation of all aspects of its work prior to requesting consultant's review.
- F. Furnish labor, materials, and equipment necessary for Consultant's review. Notify Consultant five working days in advance when ready for final review of elevator or group of elevators.
- G. Consultant's written list of observed deficiencies of materials, equipment, and operating systems will be submitted to Contractor for corrective action. Consultant's review shall include as a minimum:
 - 1. Workmanship and equipment compliance with Contract Documents.
 - 2. Contract speed, capacity, floor-to-floor times, and door performance compliance with Contract Documents.
 - 3. Performance of following is satisfactory:
 - a) Starting, accelerating, running.
 - b) Decelerating, stopping accuracy.
 - c) Door operation and closing force.
 - d) Equipment noise levels.
 - e) Signal fixture utility.
 - f) Overall ride quality.
 - g) Performance of door control devices.
 - h) Operations of emergency two-way communication device.
 - i) Operations of firefighters' service.
 - j) Operations of special security features and floor lock-off provisions.
 - k) Operations of remote monitoring devices.
 - 4. Test Results:
 - a) In all test conditions, obtain specified contract speed, performance times, stopping accuracy without re-leveling, and ride quality to satisfaction of Owner and Consultant. Tests will be conducted under both no load and full load condition.
- H. Performance Guarantee: Should Consultant's review identify defects, poor workmanship, variance, or noncompliance with requirements of specified codes and/or ordinances, or variance or noncompliance with the requirements of Contract Documents, Contractor shall complete corrective work in an expedient manner to satisfaction of Owner and Consultant at no cost as follows:
 - 1. Replace equipment which does not meet code or Contract Document requirements.
 - 2. Perform work and furnish labor, materials, and equipment necessary to meet specified operation and performance.
 - 3. Perform retesting required by governing code authority, Owner, and Consultant.
- I. A follow-up final contract compliance review shall be performed by Consultant after notification by Contractor that all deficiencies have been corrected. Provide Consultant with copies of the initial deficiency report marked to indicate items which Contractor considers complete.

MANUFACTURER'S WARRANTY

- J. Manufacturer agrees to repair, restore, or replace elevator equipment that fails due to defective materials or poor workmanship within specified warranty period.

- K. Warranty Period: Twelve (12) months from date of Substantial Completion:
- L. The Elevator Contractor guarantees that the materials and workmanship of the apparatus installed by them and any subcontractor, under this contract, is first class in every respect and that they will make good on any defects not due to ordinary wear and tear or improper use, which may develop within one year from the date of final acceptance of all equipment.
- M. Manufacturer's warranty to repair or replace defective products or their components in the event of defects within a specified period.
- N. Neither the final payment nor any provisions of the contract documents relieve the Elevator Contractor of any obligation provided by law. They shall remedy any defects and pay all expenses for any damage to other work.
- O. The warranty as outlined above, for all devices, starts from the date of final acceptance of each device, by the Consultant and the Owner, of all work specified and intended under these contract documents.

OWNER'S INFORMATION

- P. Provide electronic copies (flash drive or Consultant-approved equivalent) of written information necessary for proper maintenance and adjustment of equipment within 30 days following final acceptance. Final retention will be withheld until data is received by Owner and reviewed by Consultant. Include the following as minimums:
 - 1. Straight-line wiring diagrams of "as-installed" elevator circuits with index of location and function of components. Provide one set reproducible master. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are Owner's property.
 - 2. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product-specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
 - 3. Lubrication instructions, including recommended grade of lubricants.
 - 4. Parts catalogs for all replaceable parts, including ordering forms and instructions.
 - 5. Instructions explaining all operating features, including all apparatus in the car and lobby control panels.
 - 6. Maintenance Control Program documentation for all equipment.
- Q. Provide Owner with the following:
 - 1. Any interface cards required for equipment maintenance, code mandated testing, and troubleshooting.
 - 2. Four sets of keys for all switches and control features properly tagged and marked.
 - 3. Diagnostic equipment complete with access codes, adjusters' manuals, and set-up manuals for adjustment, diagnosis, and troubleshooting of elevator system, and performance of routine safety tests.
- R. Preventive Maintenance Contract:
 - 1. Furnish properly executed contract for continuing preventive maintenance.

- S. Acceptance of such records by Owner/Consultant shall not be a waiver of any Contractor deviation from Contract Documents or shop drawings or in any way relieve Contractor from his responsibility to perform work in accordance with Contract Documents.

1.4 RELATED COORDINATION

RELATED BUILDING WORK INCLUDED IN CONTRACT

A. Architectural and Structural, Hoistway and Hallway:

1. Patch any cracks or penetrations in the hoistway to provide smoke and fire rating required by the AHJ. Provide product and installation process documentation as requested.
2. Patch penetrations and gaps in finished elevator lobbies after installation of new signal fixtures. Match existing wall finishes.
3. Protect open hoistways and entrances during construction per OSHA Regulations.
4. Protect car enclosure, hoistway entrance assemblies, and special metal finishes from damage.

B. Architectural and Structural, Machine Room:

C. Plumbing and Fire Protection: BY OTHERS IF CODE REQUIRED

1. Install and program smoke sensors in elevator lobbies and machine room as required for Phase I firefighters recall operation.
2. Provide heat detector in machine room to activate shunt trip contacts in elevator disconnects.

D. Mechanical:

- a) Device in machine room and at top of hoistway (if provided) to provide signal for general alarm.
 - b) Provide technician from fire alarm contractor for pre-test of system during normal working hours.
 - c) Provide technician from fire alarm contractor for acceptance test of system with AHJ during normal and overtime working hours.
 - d) Remove fire alarm devices from pit where not required.
 - e) Remove fire alarm devices from hoistway overhead where not required.
2. Means to automatically disconnect power to affected elevator drive unit and controller prior to activation of machine room fire sprinkler system and/or hoistway fire sprinkler system. Provide heat detectors, shunt trip breaker and all necessary equipment.

E. Standby Power Provision: IF EMERGENCY GENERATOR IS ON SITE

1. Standby power of normal voltage characteristics via normal electrical feeders to run one elevator at a time in each elevator group and/or single elevator unit at full-rated car speed and capacity.
2. Conductors from auxiliary form "C" dry contacts, located in the standby power transfer switch to a designated elevator control panel in each elevator group and/or single elevator unit to indicate utility or standby power active.
3. Conductors from auxiliary form "C" dry contacts, located in the standby power transfer switch to a designated elevator control panel in each elevator group and/or single elevator unit. Provide a time delay of 30-45 seconds for pre-transfer signal in either direction.

4. Standby single-phase power to group controller, and each elevator controller for car lighting, exhaust blower, emergency signaling device, intercom amplifier, hoist machine cooling fan, car heating and air conditioning unit.
 5. Means for absorbing regenerated power during an overhauling load condition per NEC 620.91. Elevators will employ solid state motor drive, presenting a non-linear active load.
 6. Standby power to machine room ventilation or air conditioning.
 7. Standby power to emergency communications devices.
- F. Controller: UL/CSA labeled.
1. Compartment: Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclose equipment with covers. Provide means to prevent overheating.
 2. Relay Design: Magnet operated with contacts of design and material to insure maximum conductivity, long life, and reliable operation without overheating or excessive wear. Provide wiping action and means to prevent sticking due to fusion. Contacts carrying high inductive currents shall be provided with arc deflectors or suppressors.
 3. Microprocessor-Related Hardware:
 - a) Provide built-in noise suppression devices providing a high level of noise immunity on all solid-state hardware and devices.
 - b) Provide power supplies with noise suppression devices.
 - c) Isolate inputs from external devices (such as pushbuttons) with opto-isolation modules.
 - d) Design control circuits with one leg of power supply grounded.
 - e) Safety circuits are not to be affected by accidental grounding of any part of the system.
 - f) System automatically restarts when power is restored.
 - g) System memory is retained in the event of power failure or disturbance.
 - h) Equipment is provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
 4. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
 5. Permanently mark components (relays, fuses, PC boards, etc.) with symbols shown on wiring diagrams.
- G. Auxiliary disconnect: Provide controller or power unit mounted auxiliary, lockable "open," disconnect if mainline disconnect is not in sight of controller and/or machine.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

SITE CONDITION INSPECTION

- A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.
- B. Do not proceed with installation until work in place conforms to project requirements.

PRODUCT DELIVERY, STORAGE, AND HANDLING

- C. General:

1. The protection of all equipment and exposed finishes shall be the responsibility of the Contractor during delivery, handling, and installation until completion of project.
 2. The Elevator Contractor shall replace damaged materials with new at no additional cost for material and labor to Owner.
- D. Delivery and Storage:
1. Manufacturers' original packing must adequately protect materials during delivery.
 2. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name, and manufacturer's name. Delivered materials shall be identical to accepted samples.
 3. Store materials in original protective packaging under cover in a dry and clean location off the ground. Remove delivered materials that are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
 4. It is the responsibility of the Contractor to properly store and protect all materials in space provided or designated by the Owner against damage, stains, scratches, corrosion, weather, construction debris, and environmental conditions.

INSTALLATION REQUIREMENTS

- E. Install all equipment in accordance with Manufacturer's instructions, referenced codes, specifications, and approved submittals.
- F. Install machine room equipment with clearances in accordance with referenced codes and specification.
- G. Install all equipment so it may be easily removed for maintenance and repair.
- H. Install all equipment for ease of maintenance.
- I. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
- J. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel:
1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
 2. Machine room equipment.
 3. Pit equipment.
 4. Neatly touch up damaged factory-painted surfaces with original paint color.
 5. Protect machine-finish surfaces against corrosion.

MANUFACTURER'S NAMEPLATES

- K. Manufacturer's name plates and other identifying markings shall not be affixed on surfaces exposed to public view. This requirement does not apply to Underwriter's Laboratories and code required labels.
- L. Each major component of mechanical and electrical equipment shall have identification plate with the Manufacturer's name, address, model number rating, and any other information required by governing codes.

COLORS OF FACTORY-FINISHED EQUIPMENT

- M. All colors will be selected from the Manufacturer's standard range unless custom colors are specified herein.
- N. Submit samples of all standard colors available and/or specified custom colors for review and approval. See Section 01 30 00, Submittals.
- O. Submit samples of all specified architectural metals specified for review and approval. See Section 01 30 00, Submittals.

MATERIALS AND FINISHES

- P. Steel:
 - 1. Sheet Steel (Furniture Steel for Exposed Work): Stretcher-leveled, cold-rolled, commercial quality carbon steel, complying with ASTM A366, matte finish.
 - 2. Sheet Steel (for Unexposed Work): Hot-rolled, commercial quality carbon steel, pickled and oiled, complying with ASTM A568/A568M-03.
 - 3. Structural Steel Shapes and Plates: ASTM A36.
- Q. Stainless Steel: Type 302 complying with ASTM A240, with standard tempers and hardness required for fabrication, strength, and durability. Apply mechanical finish on fabricated work in the locations shown or specified, Federal Standard and NAAMM nomenclature, with texture and reflectivity required to match Architect's sample. Protect with adhesive paper covering.
 - 1. No. 4 Satin: Directional polish finish. Graining directions as shown or, if not shown, in vertical dimension.
 - 2. No. 8 Mirror: Reflective polish finish with no visible graining.
 - 3. Textured: 2WL as manufactured by Rigidized Metals or 5-SM as manufactured by Rimex Metals or approved equal with .050" mean pattern depth with bright directional polish (satin finish).
 - 4. Burnished: Non-directional, random abrasion pattern.
- R. Bronze: Stretcher-leveled, re-squared sheets composed of 60% copper and 40% zinc similar to Muntz Metal, Alloy Group 2, with standard temper and hardness required for fabrication, strength, and durability. Clean and treat bronze surfaces before mechanical finish. After completion of the final mechanical finish on the fabricated work, use a chemical cleaner to produce finish, Federal Standard, and NAAMM nomenclature, matching Architect's sample:
 - 1. No. 4 Satin: Directional polish finish, fine-satin, clear-coated with clear-organic coating recommended by Fabricator. Provide graining direction as shown or, if not shown, in vertical dimension.
 - 2. No. 8 Mirror: Reflective polish finish with no visible graining, bright-polished, clear-coated finish with clear-organic lacquer coating recommended by Fabricator.
 - 3. Acid-Etched Pattern: Provide a No. 8 mirror reflective-polished background with selectively acid-etched, matte-textured, custom pattern as shown. Acid selection and dilution, if required, as recommended by Fabricator. After final finishing, coat bronze with clear-organic lacquer coating recommended by Fabricator.
- S. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.
- T. Plastic Laminate: ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050" ±0.005" thick, color and texture as follows:

1. Exposed Surfaces: Color and texture selected by Architect.
 2. Concealed Surfaces: Contractor's standard color and finish.
- U. Fire-Retardant Treated Particle Board Panels: Minimum 3/4" thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of 25 or less, registered with Local Authorities for elevator finish materials.
- V. Natural Finish Wood Veneer: Standard thickness, 1/40" thoroughly dried conforming to ASME/HPMA HP-1983, Premium Grade. Place veneer, tapeless spliced with grain running in direction shown, belt and polish sanded, book-matched. Species and finish designated and approved by Architect.
- W. Paint: Clean exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of industrial enamel paint. Galvanized metal need not be painted.
- X. Prime Finish: Clean all metal surfaces receiving a baked enamel paint finish of oil, grease, and scale. Apply one coat of rust-resistant primer followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of primer.
- Y. Baked Enamel Finish: Prime finish per above. Unless specified "prime finish" only, apply and bake three additional coats of enamel in the selected solid color.
- Z. Entrance Field Paint:
1. Clean all surfaces to remove dirt and grease.
 2. Sand and finish surfaces as necessary to remove pits and scratches and prepare surface for painting.
 3. Apply filler to ensure smooth surface; sand and apply one coat of electrostatic enamel in the selected solid color.
- AA. Refinishing of natural metals: Remove existing protective finish. Buff as necessary to remove scratches. Regrain or finish as specified and protect as indicated for particular metal type.
- BB. Entrance Support Equipment within Hoistway: Include strut angles, headers, sill support angles, fascia, hanger covers, etc.
1. Clean, remove, and check for corrosive activity. Replace components which exhibit severe deterioration.
 2. Tighten all fastenings.
- CC. Glass: Laminated safety glass, minimum 9/16" thick, conforming to ANSI Z97.1 and CPSC 16 CFR Part 1201.

1.6 CLOSEOUT SUBMITTALS

A. FINAL CONTRACT COMPLIANCE REVIEW

ACTION SUBMITTALS

- B. Within thirty calendar days after award of contract and before beginning equipment fabrication submit field verified existing installation information for review.

1. Hydraulic Car Information:
 - a) Existing Total Car Weight:
 - 1) Documented on crosshead data tag, all cars.
 - 2) Field Verified: weigh single cars and one car per group of each identical duty type.
 - b) Estimated Gross Load on Jack
 2. Power Confirmation Information: Field verified existing conditions at each elevator main disconnect:
 - a) Actual maximum available voltage and current.
 - b) Verify true earth ground value.
- C. Within thirty calendar days after award of contract and before beginning equipment fabrication submit planned modernization design information, shop drawings, and required material samples for review. Allow thirty calendar days for response to initial submittal.
1. Indicate equipment lists, reactions, and design information on layouts in table form, including:
 - 1) Total car weight to be included on new crosshead data tag.
 - 2) Written confirmation that designed modernization total combined weight of car and rated load:
 - (a) Does not vary by more than 5% from that of the original installation.
 - 3) Verify buffer capacity via data tags or known manufacturing data.
 - 4) Verify car safety capacities via data tags.
 - b) Power Confirmation Information: Design for existing conditions.
 - 1) Motor horsepower and code letter designation.
 - 2) Motor drive starting current, full load running current, and demand factor.
 - 3) Engineered power consumption based on hydraulic elevator with [HYDRAULIC UP STARTS] upstarts per hour full load
 - 4) Written confirmation that existing electrical provisions are adequate for post modernization installation equipment requirements.
 - c) Written confirmation that total planned modernization reactions on building structure do not exceed originally designed reactions by more than 5%. If installation has been altered previously and original car top data tag is missing, confirm that new reactions will not exceed existing reactions. Reaction calculations shall include:
 - 1) Hydraulic Elevators
 - (a) Gross load on jack
 - 2) All Elevators
 - (a) Car Capacity
 - d) Product Data, Including:
 - 1) Capacities, sizes, performances, operation, control, signal systems operations, safety features, finishes, and similar information.
 - 2) Product data for car enclosures and hoistway entrances.
 - 3) Product data for signal fixtures, lights, graphics, tactile marking plates, and details of mounting.
 - 4) Full details of ascending car protection means and installation.

- 5) Two-way conversation devices.
- 6) Post-modernization machine room heat emissions in BTU.

D. Shop Drawings:

1. Fully Dimensioned Fixture Drawings:

- a) Car operating panels.
- b) Car floor indicators.
- c) Hall stations.
- d) Destination/landing input stations.
- e) Position indicators.
- f) Hall lanterns.
- g) Access key switch.
- h) Remote panels.

E. Samples for Initial Selection: For finishes involving surface treatment or paint.

- 1. For exposed car, hoistway door and frame, and signal equipment finishes.
- 2. Samples of Sheet Materials: 3" (75 mm) square.
- 3. Running Trim Members: 4" (100 mm) lengths.
- 4. Include full component samples, if requested:
 - a) Signal fixtures.
 - b) Lighting.
 - c) Graphics.
 - d) Braille plates.

F. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract.

- 1. Include any unique or product specific procedures or methods required to inspect or test the equipment.
- 2. Identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.

G. Submittal review shall not be construed as an indication that submittal is correct or suitable or that the work represented by submittal complies with the Contract Documents. Compliance with Contract Documents, Code requirements, dimensions, fit, and interface with other work is Contractor's responsibility.

H. Acknowledge and/or respond to review comments within fourteen calendar days of return.

- 1. Promptly incorporate required changes due to inaccurate data or incomplete definition so that delivery and installation schedules are not affected.
- 2. Identify and cloud drawing revisions including Contractor elective revisions on each re-submittal.

I. Contractor's revision response time is not justification for equipment delivery or installation delay.

1.7 FINAL CONTRACT DOCUMENTS

A. See Section 01 70 00, Project Closeout.

1.8 PERMITS, TESTS, AND CERTIFICATES

A. Permits:

1. Secure and pay for all permits required for Work to be performed, including but not limited to:
 - a) Municipal and State permits.
 - b) Device or equipment removal permits.
 - c) Hot works permits.
2. Post, maintain, and renew all permits in compliance with local governmental requirements.
3. Obtain final close-out of all required permits.
4. Tests and Inspections: Schedule with the AHJ and perform tests required by Governing Authority in accordance with procedure described in ASME A17.2 Guide for Inspection of Elevators, Escalators, and Moving Walks in the presence of Authorized Representative of the AHJ.

B. Certificates: Obtain, pay for, and deliver to Purchaser with all temporary and final inspection certificates provided by proper governing authorities.

C. Violations: Resolve any outstanding violations on record with the AHJ on devices being removed prior to final acceptance by the Purchaser.

1.9 QUALITY ASSURANCE

A. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of currently enforced codes, laws, and/or authorities, including revisions and changes in effect including, but not limited to:

1. American Society of Mechanical Engineers:
 - a) ASME A17.1, Safety Code for Elevators, Escalators, and Moving Walks.
 - b) ASME A17.2, Guide for Inspection of Elevators, Escalators, and Moving Walks.
 - c) ASME A17.5, Elevator and Escalator Electrical Equipment.
 - d) ASME A17.6, Standard for Elevator Suspension, Compensation, and Governor Systems.
 - e) ASME A17.7, Performance Based Safety Code for Elevators, Escalators, and Moving Walks.
2. National Fire Protection Association (NFPA):
 - a) NFPA 70, National Electric Code.
 - b) NFPA 80, Fire Doors and Windows.
 - c) NFPA 101, Life Safety Code.
 - d) NFPA 13, Installation of Sprinkler Systems.
3. International Building Code (IBC).
4. Accessibility:
 - a) American National Standard Institute (ANSI): A117.1, Accessible and Usable Buildings and Facilities.
 - b) New Jersey Codes
5. Local Codes:
 - a) New Jersey Building Code

- B. Inspections: Provide access to areas where work is being performed for the Purchaser at any time throughout the project.

1.10 WARRANTY

- A. See SECTION 01 70 00 – FINAL CONTRACT COMPLIANCE REVIEW.

1.11 MAINTENANCE

- A. See SECTION 01 80 00 – MAINTENANCE.

1.12 DELIVERY, STORAGE, AND HOISTING

- A. See SECTION 01 60 00 – MATERIAL AND HANDLING.

PART 2 – PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

A. Approved Elevator Systems:

1. Approved subject to compliance with the requirements of the contract, provide products by one or more of the following Principal Manufacturers. Where specific product models are referenced below only those specific product models or types are approved.
 - a) Otis
 - b) Schindler
 - c) TK Elevator
 - d) Canton Elevator
 - e) EEVI
 - f) MEI – Total Elevator Solutions
2. Controllers:
 - a) GAL.
 - b) MCE.
 - c) Smart Rise.
 - d) Vertitron Midwest
 - e) Alpha
 - f) ESI
3. Hydraulic Machines (Power Units):
 - a) EECO
 - b) Maxton
 - c) IMO
4. Hoistway Entrances:
 - a) Columbia.
 - b) EDI-ECL.
 - c) Fujitec America, Incorporated.

- d) Mitsubishi Electric Corporation.
 - e) National Elevator Cab and Doors.
 - f) Regency Elevator Cabs.
 - g) Wittur.
5. Passenger Elevator Door Equipment (Operators, Tracks, Hangers, and Closers):
- a) GAL.
 - b) Fujitec America, Incorporated.
 - c) Mitsubishi Electric Corporation.
 - d) Wittur.
6. Elevator Car Enclosures:
- a) EDI/ECI.
 - b) Elite Cabs.
 - c) Globe Architectural & Metal.
 - d) National.
 - e) Regency Elevator Cabs.
 - f) G & R Elevator
 - g) Fab a Cab
 - h) Snap Cabs
7. Car and Hall Signal Fixtures:
- a) EPCO.
 - b) Innovation.
 - c) MAD Fixtures.
 - d) Monitor.
 - e) National Elevator Cab and Doors.
8. Two-Way Audio Communication Device:
- a) Janus/Rath
 - b) Wurtec
9. Two-Way Video/Non-Verbal Communication Devices:
- a) Janus/Rath
 - b) Wurtec
10. Elevator Car Enclosures:
- a) EDI/ECI.
 - b) Elite Cabs.
 - c) Globe Architectural & Metal.
 - d) National.
 - e) Regency Elevator Cabs.
 - f) G & R Elevator.
 - g) Gunderlin.

11. Car and Hall Signal Fixtures:
 - a) EPCO.
 - b) Innovation.
 - c) MAD Fixtures.
 - d) Monitor.
12. Door Edge Detector with Approaching Object Detection:
 - a) CEDES
 - b) Janus

2.2 MATERIALS

- A. See SECTION 01 60 00 – MATERIAL AND HANDLING

PART 3 – PERFORMANCE AND OPERATION

- 3.1 FIELD CONDITIONS Provide passenger elevator with all necessary equipment intended for outdoor use and resistant to damage from low temperatures, ice, and water, including, but not limited to the following:
1. Sills:
 - a) Sills provided with means to prevent the accumulation of ice and water in the sills (heaters, drains, etc.).
 - b) Stainless steel landing sills.
 - c) Stainless steel car sill.
 2. Stainless steel fascia, dust covers, platform guards.
 3. Hoistway and Pit Equipment:
 - a) Hoistway and pit limit switches.
 - b) Center/top of hoistway junction box.
 - c) Rigid and flexible conduits and tubing, including all connections and fittings.
 - d) Risers, pull boxes, junction boxes and troughs, including all connections and fittings.
 - e) Hoistway door interlocks.
 - f) Stop switches.
 - g) Compensating switches.
 - h) Buffer switches.
 - i) Taping of duct covers will not be accepted as watertight protection.
 4. Top of Car Equipment:
 - a) Operating and safety devices.
 - b) Rigid and flexible conduits and tubing, including all connections and fittings.
 - c) Pull boxes, junction boxes and troughs, including all connections and fittings.
 - d) Top of car run box.
 - e) Gate switch.
 - f) Door operator motor.
 - g) Door operator motor junction box.

- h) Door operator control module.
- i) Door detector and power supply.
- j) Protective stainless-steel cover (canopy) placed and secured above components to divert water away from top of car equipment.
- k) Cab top ceiling and lower ceiling joints.
- 5. Cab Interior:
 - a) Car button panel back box.
 - b) Car button panel face plate.
 - c) Rigid and flexible conduits and tubing, including all connections and fittings.
- 6. Under Car Equipment:
 - a) Pull boxes, junction boxes, and troughs, including all connections and fittings.
 - b) Rigid and flexible conduits and tubing, including all connections and fittings.

3.2 PERFORMANCE REQUIREMENTS

- A. Car Speed: Allowable variance from contract speed of no more than +/- 10% in the up direction and +10%/-20% in the down direction.
- B. Car Capacity: Safely lower, stop, and hold rated load.
- C. Car Stopping Zone: $\pm 3/8$ " under any loading condition.
- D. Door Times: Seconds from start to fully open or fully closed:
 - 1. Cars PE-1, PE-2]: Door Open: 2.1seconds. Door Close: 2.4 seconds.
 - 2. Cars SE-3: Door Open: 3.7 seconds. Door Close: 5.1 seconds.
- E. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 3/4 open for center-opening doors or 1/2 open for side-opening doors, and car is level and stopped at next successive floor under any loading condition or travel direction:
 - 1. Cars PE-1, PE-2 : 12.5 seconds.
 - 2. Cars SE-3: 16.5seconds.
- F. Noise and Vibration Control:
 - 1. Airborne Noise:
 - a) Measured noise level of elevator equipment and its operation shall not exceed 60dBA inside car under any condition including door operation and car ventilation exhaust blower on its highest speed.
 - b) Limit noise level in the machine room and control space relating to elevator equipment and its operation to no more than 80 dBA.
 - c) All dBA readings to be taken 3'-0" off the floor and 3'-0" from the equipment using the "A" weighted scale.
 - 2. Vibration Control: Mechanically isolate all new elevator equipment from the building structure and other components. Minimize objectionable noise and transmission of vibrations to occupied areas of the building.

3.3 ELEVATOR OPERATION REQUIREMENTS

A. General:

1. Cars automatically slow down and stop level at floors in response to car and landing calls with stops made in sequence in the established direction of travel, regardless of order in which buttons are pressed.
2. Landing calls are canceled when the assigned car arrives at the landing.
3. Automatic Dispatch Failure: Provide auxiliary dispatch system to automatically dispatch elevators in the event of failure of the primary control system.
4. Hall Call Button Failure: Should failure of hall call button system occur, initiate operation providing predetermined service to all landings; elevators respond normally to car calls.
5. Automatic Leveling:
 - a) When arriving at a floor cars level to within 1/8" above or below the landing sill prior to opening doors, without travelling past the landing during leveling
 - b) Maintain leveling accuracy regardless of carload, direction of travel, rope slippage or stretch.
6. Power Conservation:
 - a) Shut off car interior lighting and ventilation fan after adjustable period (60-180 seconds) of no elevator demand.
 - b) Turn on prior to opening car doors when elevator demand returns.

B. Door Operation:

1. Passenger Elevators:
 - a) Automatically open doors when car arrives at a floor.
 - b) Stop and reopen doors or hold doors in open position upon activation of "door open" button.
 - c) At expiration of normal dwell time, or upon activation of "door close" button, close doors:
 - 1) Prevent doors from closing and reverse doors at normal opening speed if door reopening device beams are obstructed while doors are closing, except during nudging operation.
 - 2) In event of door reopening device failure, provide for automatic shutdown of car at floor level with doors open.
 - 3) Close cycle does not begin upon activation of "door close" button until normal door dwell time for a car or hall call has expired, except firefighters' operation.
 - d) Nudging Operation:
 - 1) After beams of door reopening device are obstructed for a predetermined time interval (minimum 20.0-25.0 seconds), sound warning signal, and attempt to close doors with maximum of 2.5 foot-pounds kinetic energy.
 - 2) Activation of the door open button overrides nudging operation and reopens doors.
 - e) Interrupted Beam Time:
 - 1) When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds.
 - 2) When beams are interrupted after the initial 3.0 second hold open time, reduce time doors remain open to an adjustable time of approximately 1.0 1.5 seconds after beams are reestablished.
 - f) Differential Door Time:

- 1) Field adjustable time that doors remain open after stopping in response to calls.
 - 2) Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
 - 3) Hall Call: Hold open time adjustable between 5.0 and 8.0 seconds.
 - g) Use hall call time when car responds to coincidental calls.
 - h) Reopen doors when car is designated for loading.
- C. Independent Service:
1. When feature is activated from within the car allow control of car only from buttons and controls inside the car.
 2. Close doors by constant pressure on desired destination floor button or door close button.
- D. Load Weighing:
1. Provide cars with adjustable cable tension monitoring load weighing device.
 2. Devices are to be self-calibrating for the time-dependent effects of compression in any resilient materials in the assemblies, transducers, etc.
 3. Provide dispatching at main floor in advance of normal intervals when car fills to capacity.
 4. Provide hall call by-pass when car is filled to a field adjustable (10%-100%) range of percentage of rated capacity and traveling in down direction.
 5. Activate audible tone and visual overload signaling device inside elevator cab activated when load weighing device senses carload has reached or exceeded a pre-determined percentage of capacity.
 6. Elevator does not close doors or run when Overload signaling device is active.
- E. Selective Collective Operation, Single Car, SE-3
1. Elevators operate via momentary pressure buttons to:
 - a) Place hall call by selecting direction of travel at each hall landing (up and down buttons at each intermediate landing, single buttons at each terminal landing).
 - b) Place car call by selecting destination floor from inside the car (individual buttons for each floor served).
 2. Hall calls, other than calls placed at the landing at which car is standing, start car, and cause the car to stop at first landing for which a call is registered in the direction of travel.
 3. Stops are made in order in which landings are reached, irrespective of sequence in which calls are registered.
 4. Parked Car (No Demand):
 - a) When feature is enabled elevator remains at landing of last assignment (if no further demand) with doors closed, for a predetermined amount of time (programmable for any amount of time). Upon expiration of time, the elevator returns to the main egress landing with the doors closed.
 - b) If feature is disabled, if no further demand, the elevator remains at landing of last assignment with the doors closed until a hall call is registered.
 5. Car and Hall Lanterns:
 - a) Lanterns provide audio and visual signal upon each stop, regardless of responding to car or hall call.
 - b) Visual signal remains active from commencement of door opening until doors are completely closed.

F. Two-Button Group Operation, Cars PE1; PE-2:

1. Elevators operate via momentary pressure buttons to:
 - a) place hall call by selecting direction of travel at each hall landing (up and down buttons at each intermediate landing, single buttons at each terminal landing).
 - b) place car call by selecting destination floor from inside the car (individual buttons for each floor served).
2. Operate cars as a group, capable of balancing service and providing continuity of group operation with one or more cars removed from the system.
3. Group control and supervisory system determines traffic levels and peak traffic conditions by continuously monitoring:
 - a) Quantity, location, and duration of hall calls.
 - b) Weight of current load in the elevator.
 - c) Anticipated time to respond to previously assigned car and hall calls.
 - d) Car speed and direction of travel.
4. Car assignments in response to hall calls are reviewed a minimum of ten times per second and revised while cars in the group are stationary or in motion to achieve the shortest possible:
 - a) Estimated time for a car to arrive at a floor in response to hall calls.
 - b) Estimated transit time for passengers inside each car in the group.
5. During peak traffic conditions priority is given to minimizing car arrival time in response to hall calls in the following order of priority:
 - a) Main Landing Demands (of any type or duration).
 - b) Long wait Down calls.
 - c) Long wait Up calls.
 - d) Up calls.
 - e) Long wait calls are those that have been registered for over thirty seconds.
 - f) Dynamic assignment of cars to serve specific floor zones is allowed to achieve required performance.
6. Car and Hall Lanterns:
 - a) Lanterns provide audio and visual signal upon each stop, regardless of responding to car or hall call.
 - b) Visual signal remains active from commencement of door opening until doors are completely closed.
 - c) Hall lantern visual signal activates as soon as a car is assigned to respond a hall call and remains active until car doors are completely closed.

G. Standby or Emergency Power Operation, IF GENERATORS ARE AVAILABLE

1. The terms Standby Power and Emergency Power are both referred to as Emergency Power in this Section. Elevator operation is the same when either is provided.
2. Where emergency power is provided to the elevator main disconnects and required by the Building Code the elevator installation shall comply with the Emergency Power Operation requirements of ASME A17.1 as modified by any superseding Building Code requirements.

3. Where emergency power is not provided, all elevator controller software and sequencing capabilities to allow future emergency power operation shall be included in the elevator control systems based on the applicable code requirements for new buildings in effect at the time of project permit application.
 4. Operation is activated by a signal from an Automatic Transfer Switch (ATS) to elevator controls indicating the Emergency power source is operational.
 - a) Start and run all elevators simultaneously and any single car simultaneously at contract car speed and capacity.
 - b) Illuminate "ELEVATOR EMERGENCY POWER" signals.
 - c) Elevator systems shall be designed to sequentially recall one elevator at a time in one bank and/or each single elevator at time. When all elevators in the first bank are recalled and parked, that control system shall communicate with the elevator control system for the next bank of elevators to commence automatic selection and return to designated landing operation until all elevators in the building are at their designated return landings with the doors open.
 - d) Once all elevators have completed the return sequence one or more individual elevators shall be returned to service.
 5. Restoration of Normal Power:
 - a) At least 20 seconds prior to transfer from emergency power to normal power at the ATS, a pre-transfer signal is supplied to the elevator control system from the ATS.
 - b) Elevators operating on emergency power stop at the next available landing and remain there until normal power is restored.
- H. Battery Rescue Operation: ALTERNATE
1. Upon loss of normal power automatically lower the car to the nearest landing depending on the load in the car.
 2. Upon arrival at the landing, the elevator doors shall open automatically and remain open until regular door time has expired; the elevator shall then be removed from service.
 3. Upon restoration of normal power, the elevator shall automatically resume normal operation.
- I. Emergency Car Communication System Operation:
1. Comply with all requirements of ASME A17.1 2019 , or later editions if adopted by the AHJ.
 2. Hands-Free Phone System:
 - a) In Car System:
 - 1) Hands-free two-way audio communication system in each elevator car.
 - 2) Automatic dialer to include automatic rollover capability if call is not answered with minimum two numbers.
 - 3) Intercom type systems shall be capable of auto dialing out of the building to any active telephone number selected by Owner if intercom call is not answered.
 - 4) Means to identify building and car for Authorized Personnel and Emergency Personnel on demand.
 - 5) Activated by button in car identified with "PHONE" symbol or by external telephone call.
 - 6) Adjacent light jewel illuminates and flashes when call is acknowledged.
 - b) Authorized Personnel Communication:

- 1) Communication system allows authorized personnel, via phone or intercom system, inside the building or at an outside location, to establish verbal communications with each elevator individually.
- 2) Provide car interior display video capability for entrapment assessment
- c) Communication for Deaf, Hard of Hearing and Speech Impaired: IF REQUIRED BY LOCAL CODE
 - 1) Means for non-verbal communication between passengers inside the elevator car and Authorized Personnel and Emergency Personnel inside or outside of the building.
 - 2) System allows for in car video display of custom or preselected text messages generated by Authorized Personnel or Emergency Personnel.
 - 3) Passengers inside the elevator car respond to text messages via "Yes" and "No" buttons that generate a visible indication at the location monitored by the Authorized/Emergency Personnel.

PART 4 – ELEVATOR ALTERATIONS

4.1 Hydraulic passenger Elevators:

ALTERATION SUMMARY		
CARS PE-1 PE-2]	EXISTING INSTALLATION	MODERNIZED INSTALLATION
Capacity:	3500 lbs.	3500 lbs.
Class of Loading:	Class A	Class A
Duty Type:	Passenger	Passenger
Contract Speed:	150 fpm	150 fpm
Hydraulic Jack Type:	In Ground	In Ground
Machine Type:	Submersible Power Unit	Submersible Power Unit
Machine Location:	Remote at floor 1	Remote at floor 1
Operation Control:	Two-Button Group Automatic	Two-Button Group Automatic
Floors Served:	1,2,3,4	1,2,3,4
Total Entrances:	4 Front	4 Front
Car Entrance Type:	Single Speed Center Opening (SSCO) Front	Single Speed Center Opening (SSCO) Front
Hoistway Entrance Type:	Single Speed Center Opening (SSCO) Front	Single Speed Center Opening (SSCO) Front
Entrance Size:	42" Wide x 84" (7'-0") High	42" Wide x 84" (7'-0") High
Minimum Clear to Underside of Canopy:	8' High	8' High

Hydraulic Service Elevator

ALTERATION SUMMARY		
CARS [CAR ID'S]	EXISTING INSTALLATION	MODERNIZED INSTALLATION
Capacity:	5000 lbs.	5000 lbs.
Class of Loading:	Class A	Class A
Duty Type:	Service	Service
Contract Speed:	150 fpm	150 fpm
Hydraulic Jack Type:	In Ground	In Ground
Machine Type:	Submersible Power Unit	Submersible Power Unit
Machine Location:	Remote at floor 1	Remote at floor 1
Operation Control:	Single Automatic	Single Automatic
Floors Served:	1,2,3,4	1,2,3,4
Total Entrances:	4 Front	4 Front
Car Entrance Type:	Two Speed Side Opening (2SSO) Front	Two Speed Side Opening (2SSO) Front
Hoistway Entrance Type:	Two Speed Side Opening (2SSO) Front	Two Speed Side Opening (2SSO) Front
Entrance Size:	54" wide x 84" High	54" wide x 84" High
Minimum Clear to Underside of Canopy:	8' High	8' High

4.2 MACHINE ROOM EQUIPMENT

- A. Provide and arrange equipment in existing machine room spaces.
- B. Identification: Permanently identify (painted on or securely attached) machine room equipment with minimum 3" characters corresponding to elevator identification.
 1. Driving machine (Power Unit).
 2. Transformer, choke/filter.
 3. Controller.

4. Main line disconnect switch.
5. Elevator hoistway pit equipment.
- C. Hydraulic Machine (Power Unit):
 1. Retain:
 - a) Drain, flush and provide new hydraulic oil.
 2. New: ALTERNATE
 - a) Assembled unit mounted on isolating pads consisting of:
 - 1) Dry or submersible type positive displacement pump and induction motor.
 - (a) Dry type only with motors exceeding 50 hp.
 - 2) Master-type control valves combining:
 - (a) Safety features.
 - (b) Holding, direction, bypass, stopping, manual lowering functions.
 - 3) Shut off valve.
 - 4) Oil reservoir with protected vent opening.
 - 5) Oil level gauge.
 - 6) Outlet strainer.
 - 7) Drip pan.
 - 8) Muffler.
- D. Motor Starter:
 1. Soft start type unit including:
 - a) Integral electronic overload protection.
 - b) Integral bypass.
- E. Muffler:
 1. In discharge oil line near pump unit.
 - a) Design shall dampen and absorb pulsation and noise in the flow of hydraulic fluid.
- F. Piping and Oil:
 1. All piping, connections and oil required for the elevator system.
 2. Buried piping shall be secondarily contained with watertight Schedule 80 PVC sleeves between elevator machine room and pit.
 3. A minimum of two sound isolation couplings shall be provided between the pump unit and oil line and the oil line and jack unit.
 4. Provide 2-90° joints to reduce vibration and create wave diffraction.
 5. Provide isolated pipe stands or hangers.
- G. Shut-Off Valve:
 1. Oil line shut off valve in the machine room or accessible from outside the hoistway.
 2. Second valve in pit adjacent to jack unit.
- H. Battery Rescue System: ALTERNATE

1. Auxiliary power source shall be provided via 12-volt D.C. battery units installed in machine room or controller space.
 2. Include solid-state charger and testing means mounted in a common metal container.
 3. Battery to be rechargeable lead acid or nickel cadmium with a ten-year life expectancy.
- I. Controller: UL/CSA labeled. NEW
1. Compartment: Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclose equipment with covers. Provide means to prevent overheating.
 2. Relay Design: Magnet operated with contacts of design and material to insure maximum conductivity, long life, and reliable operation without overheating or excessive wear. Provide wiping action and means to prevent sticking due to fusion. Contacts carrying high inductive currents shall be provided with arc deflectors or suppressors.
 3. Microprocessor-Related Hardware:
 - a) Provide built-in noise suppression devices providing a high level of noise immunity on all solid-state hardware and devices.
 - b) Provide power supplies with noise suppression devices.
 - c) Isolate inputs from external devices (such as pushbuttons) with opto-isolation modules.
 - d) Design control circuits with one leg of power supply grounded.
 - e) Safety circuits are not to be affected by accidental grounding of any part of the system.
 - f) System automatically restarts when power is restored.
 - g) System memory is retained in the event of power failure or disturbance.
 - h) Equipment is provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
 4. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
 5. Permanently mark components (relays, fuses, PC boards, etc.) with symbols shown on wiring diagrams.
- J. Auxiliary disconnect: Provide controller or power unit mounted auxiliary, lockable "open," disconnect if mainline disconnect is not in sight of controller and/or machine.

4.3 HOISTWAY AND PIT EQUIPMENT

- A. Provide and arrange equipment in existing hoistway spaces.
- B. Hydraulic Jack Assembly:
1. Retain.
 - a) Replace packing
- C. Overspeed Valve:
1. Pressure sensitive, mechanically actuated seismic safety valve.
 2. Connect valve directly to jack assembly oil inlet.
- D. Jack Support and Shut-Off Valves:
1. Retain.

E. Guide Rails:

1. Retain:
 - a) Clean rails and brackets.
 - b) Remove rust.
 - c) Repaint non-machined surfaces.
 - d) Check and tighten all rail and bracket fastenings.

F. Buffers, Car:

1. Retain:
 - a) Remove rust and repaint non-machined surfaces.
 - b) Spring type with blocking and support channels.
 - c) Provide sign in pit indicating designed counterweight runby.

G. Terminal Stopping Devices:

1. New:
 - a) Normal and final devices.

H. Electrical Wiring and Wiring Connections:

1. Conductors and Connections:
 - a) Copper throughout with individual wires coded and connections on identified studs or terminal blocks.
 - b) Use no splices or similar connections in wiring except at terminal blocks, control compartments, or junction boxes.
2. Conduit:
 - a) Galvanized steel conduit, EMT, or duct.
 - b) Flexible conduit length not to exceed 3'-0".
3. Traveling Cables:
 - a) Provide 12 twisted shielded pairs in addition to wires needed to connect specified items and code required spares.
 - b) Tag spares in machine room.
 - c) Provide cables from controller to car top.
4. Auxiliary Wiring:
 - a) Provide conduit, wiring, connections, and machine room demarcation junction boxes for:
 - 1) Fire alarm initiating devices.
 - 2) Emergency two-way communication system.

4.4 HOISTWAY DOOR OPERATING EQUIPMENT

A. Horizontal Sliding Passenger Entrances:

1. Door Hangers, Hoistway:
 - a) New:

- 1) Two-point suspension design.
 - 2) New rollers with neoprene roller surface.
 - 3) Eccentric upthrust roller adjustment.
2. Door Tracks, Hoistway:
- a) Retain:
 - 1) Clean and sand for quiet operation.
 - 2) Replace track liners.
3. Hoistway Door Interlocks and Pick-up Roller Assemblies:
- a) New.
4. Hoistway Door Closers:
- a) New:

Replace in kind with new].
5. Hoistway Door Unlocking Devices:
- a) Retain.
6. Hoistway Access Switches:
- a) New:
 - 1) Top and bottom floors.
 - 2) Mount in as directed by ownership
 - 3) Provide switch with faceplate.
7. Door Interlocks:
- a) New:
 - 1) Operable without retiring cam.
- B. Floor Numbers: Stencil paint 4" high floor designations in contrasting color on inside face of hoistway doors or hoistway fascia in location visible from within car.
- 4.5 HOISTWAY ENTRANCE FRAMES AND DOOR PANELS
- A. Provide and arrange equipment in same location as existing entrances.
- B. Passenger Elevator Entrance Frames:
1. Retain: clean and remove scratches
- C. Transom Panels:
1. Retain:
- D. Horizontal Sliding Hoistway Door Panels:
1. Retain:
 - a) Clean and remove
 - b) Provide new door gibs with fire tabs at all floors.
 - 1) Minimum two gibs per panel, one at leading edge, and one at trailing edge of each panel.

- 2) Provide code required door panel retainer mechanism on lower edge of door panel.

4.6 HOISTWAY ENTRANCE SILLS AND SUPPORT

- A. Sill Supports, Hoistway Entrance:
 1. Retain:
 - a) Check and tighten all fastenings.
- B. Fascia, Toe Guards, and Hanger Covers:
 1. Retain:
 - a) Replace damaged or missing sections.
 - b) Check and tighten all fastenings.
- C. Struts and Headers:
 1. Retain:
 - a) Check and tighten all fasteners.

4.7 CAR EQUIPMENT

- A. Frame:
 1. Retain:
 - a) Check and tighten all fastenings.
 - b) Adjust as required for plumb and square alignment.
- B. Platform:
 1. Retain:
 - a) Adjust as necessary for plumb and level alignment.
 - b) Reinforce if required.
 - c) Check and tighten all fastenings.
- C. Platform Guard:
 1. Retain:
 - a) Remove any rust and repaint.
- D. Car Rail Guide Roller or Shoe Assemblies:
 1. Retain:
 - a) Check and tighten all fastenings.
 - b) Replace all rollers or inserts.
- E. Top of Car Guardrail:
 1. Retain:
 - a) Check and tighten all fastenings.
 - b) Replace damaged railing sections.
 - c) Confirm Code compliance
- F. Car Top Control Station:

1. Mount to provide safe access and utilization while standing on car top.
 2. Operating device with Up and Down direction buttons, a Run button, an Inspection/Automatic switch and Emergency Stop switch.
 3. Operating device provides an audible and visible indicator that fire recall has been initiated.
 4. Fix station to the car crosshead or provide portable station provided the extension cord and housing is permanently attached to the car crosshead.
 5. The car will be operated by constant pressure on the appropriate directional button and the Run button simultaneously.
 6. Normal operating devices will be inoperative while this device is in use.
- G. Car Top Emergency Audible Signal:
1. Provide on top of each elevator.
 2. Activation of Alarm Button or Emergency Stop switch will cause Emergency Audible Signal.
 3. Provide auxiliary power supply to provide 1-hr. power in the event of loss of normal power.
- H. Work Light and Duplex Plug Receptacle:
1. Work light on top and bottom of car.
 2. Car top light mounted to provide illumination of all car top equipment.
 3. GFCI protected duplex outlet. One (1) at top and one (1) at bottom of car.
 4. Include on/off switch and lamp guard.
- I. Car Sills – Passenger or Service Duty:
1. Retain:
 - a) Clean full width.
 - b) Check and tighten all fastenings.
- J. Car Door Panels – Passenger or Service Duty:
1. Retain:
 - a) Adjust vertical and horizontal clearances to meet Code requirements.
- K. Car Door Hangers – Passenger or Service Duty:
1. Retain:
 - a) Modify to include door retainer mechanism to address failure of primary upper door panel guidance.
 - b) Replace all rollers.
 - c) Check and tighten all fastenings.
- L. Car Door Track – Passenger or Service Duty:
1. Retain:
 - a) Clean and sand for smooth, quiet operation.
 - b) Check and tighten all fastenings.
- M. Car Door Header – Passenger or Service Duty:
1. Retain:

- a) Check and tighten all fastenings.
- N. Car Door Closed Detection
 - 1. SIL rated device to detect closed position of car doors.
 - 2. Design and operation to comply with ASME A17.1 2019 or later edition.
- O. Car Door Interlock:
 - 1. Mechanical door interlock device to prevent:
 - a) Machine operation or power door opening outside of door zone.
 - b) Manual door opening from inside car outside of door zone.
 - 2. Design and operation to comply with ASME A17.1 2019 or later edition.
- P. Car Door/Gate Electrical Contact:
 - 1. New:
 - a) Prohibit car operation unless car door or gate is closed.
- Q. Door Clutch – Passenger or Service Duty:
 - 1. Retain:
 - a) Check and tighten all fastenings.
- R. Passenger Door Operator:
 - 1. New:
 - a) High-speed, heavy-duty door linear type operator capable of opening doors at no less than 2.5 fps.
 - b) Accomplish reversal in no more than 2½" of door movement.
 - c) Solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current.
 - d) Maintain consistent, smooth, and quiet car door operation at all floors, regardless of door weight or varying air pressure.
 - 1) Relating cables are prohibited on single speed applications.
- S. Passenger Door Reopening Device:
 - 1. New:
 - a) Black fully enclosed infrared device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel to minimum height of 7'-0" above finished floor.
- T. Car Operating Panel:
 - 1. New:
 - a) Cars [CAR ID'S]:
 - b) One (1) car operating panel(s) per car.
 - c) Mounted in stationary return panel(s) with separate hinged faceplate.
 - d) Metal box containing operating fixtures mounted behind the car return panel.
 - 1) Vandal resistant.
 - e) Provide Exposed Pushbuttons to Initiate:

- 1) Car call registration.
 - 2) Alarm.
 - 3) Door open.
 - 4) Door close.
 - 5) Emergency push-to-call communication.
- f) Pushbuttons:
- 1) Provide minimum 3/4" diameter raised or flush floor pushbuttons which illuminate to indicate call registration.
 - 2) Brushed stainless buttons with illuminated LED halo.
 - 3) Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
 - 4) Identify buttons with flat stainless steel tactile symbols rear mounted.
- g) Key operated stop switch to sound group control panel distress signal when actuated.
- h) Locked Firefighters' Emergency Operation Panel:
- 1) Openable by the same key which operates the Fire Operation switch.
 - 2) Including the following features:
 - (a) Phase II fire access switch.
 - (b) Firefighters' visual indication.
 - (c) Call cancel button.
 - (d) Stop switch, manually operated.
 - (e) Door open button.
 - (f) Door close button.
 - (g) Floors served signage.
- i) Service Compartment:
- 1) Provide lockable service compartment with recessed flush door.
 - 2) Door material and finish to match car return panel or car operating panel faceplate.
 - 3) Include the following controls in lockable service cabinet with function and operating positions identified by permanent signage or engraved legend:
 - 4) Access switch.
 - (a) Light switch.
 - (b) Three position exhaust blower switch.
 - (c) Independent service switch.
 - (d) Constant pressure test button for battery pack emergency lighting.
 - (e) 120-volt, AC, GFCI protected electrical convenience duplex outlet.
 - (f) Card reader override switch.
 - (g) Switch to select either floor voice annunciation, floor passing tone, or chime.
 - (h) Car lighting dimmer switch.
 - (i) Keyed stop switch.

- j) Provide black paint filled (except as noted), engraved, or approved etched signage as follows with approved size and font:
 - 1) Phase II firefighters' operating instructions on inside face of firefighters' compartment door.
 - 2) Engrave filled red firefighters' operation on outside face of compartment door.
 - 3) Building identification car number on main car operating panel(s).
 - 4) "No Smoking" on [COP'S] car operating panel(s).
 - 5) Car capacity in pounds on service compartment door.
 - 6) Number of allowable passengers

U.

V. Passenger Door Reopening Device:

- 1. New:
 - a) Black fully enclosed infrared device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel to minimum height of 7'-0" above finished floor.
 - b) Integral device to detect passenger or vehicle approach from elevator lobby.
 - c) Extended housing, lens, and additional beams full height of door panels.

4.8 COMMUNICATION

A. Car Communication System:

- 1. Hands free two-way communication instrument in car:
 - a) Mounted behind car operating panel.
 - b) Button on car operating panel to initiate two-way communication from Car.
 - c) Match car operating panel pushbutton design.
 - d) System includes:
 - (a) Auto dialer.
 - (b) Speaker.
 - (c) Microphone.
 - (d) Adjacent light jewel that illuminates and flashes when call is acknowledged.
 - (e) Call button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.
 - (f) Rechargeable back-up battery and charging system.
 - (g) Wiring and connections between all devices inside the car and the elevator controller.
- 2. Communication for Deaf, Hard of Hearing and Speech Impaired:
 - a) Device inside car to allow text communication between passengers in the car and Authorized and Emergency Elevator Personnel. System includes:
 - 1) Video screen inside car to display text messages.
 - 2) Separate pushbuttons labeled "yes" and "no".
 - (a) Locate on the same car operating panel as the call button for the hands free communication device.

- b) Dedicated emergency communications video camera inside the elevator.
 - 1) Mount to capture view of all passengers in the cab.
 - c) Device is located on the same car operating panel as the phone pushbutton.
 - d) Provide shielded twisted pair wiring to communicate to machine room or equipment space network box.
3. Remote Video Monitoring System:
- a) Dedicated video camera inside elevator car to allow Authorized Personnel to remotely observe passengers at any location on the car floor.
 - b) Includes all wiring, conduit, fiber optic strands, encoders, routers, internet connections, cloud-based services required to allow Authorized Personnel to access video signal.

4.9 CAR ENCLOSURE AND INTERIOR FINISHES

- A. Unless specifically identified as “Retain,” “Reuse,” or “Refurbish,” provide new equipment. Contractor may, with Consultant approval, provide new equipment in lieu of refurbishing existing. See Section 00 80 00, Supplemental Conditions.
- B. See Section 01 03 00, Alternates and Allowances, to include provisions for custom design options not included below.
- C. Car Enclosure (Cab Shell):
 - 1. Retain.
- D. Passenger and Service Car Fronts:
 - 1. Car Front Returns:
 - a) Retain:
 - 1) Check and tighten all fastenings.
 - 2) Modify for installation of new signal and pushbutton fixtures.
 - 2. Front Transoms:
 - a) Retain:
 - 1) Check and tighten all fastenings.
 - 2) Modify for installation of new signal and pushbutton fixtures.
- E. Passenger Car Interior Side and Rear Wall Finishes: ALTERNATE
 - 1. Retain.
- F. Cab Wall Base:
 - 1. Retain.
- G. Handrails:
 - 1. Retain:
 - a) Check and tighten all fastenings.
 - b) Remove existing and reinstall on new panels
- H. Lighting:
 - 1. Retain.

- I. Suspended Ceiling:
 - 1. Retain.
- J. Ventilation:
 - 1. Retain.
- K. Car Finish Floor Covering:
 - 1. Retain.
- L. Pads and Buttons, Cars [CAR ID'S]:
 - 1. Two pads covering side walls and adjacent front returns and one covering rear wall.
 - 2. Provide cutouts to access main car operating panel.

4.10 HALL CONTROLS

- A. Hall Pushbutton Station Fixtures:
 - 1. Flush mounted pushbutton station fixtures with enlarged faceplate to cover existing wall block out.
 - 2. Provide any cutting and patching required.
 - 3. Pushbuttons for each direction of travel which illuminate to indicate call registration. Provide LED illumination.
 - 4. Approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency as part of faceplate.
 - 5. Pushbutton design to match car operating panel pushbuttons.

4.11 CAR ARRIVAL AND TRAVEL DIRECTION SIGNALS

- A. Hall Direction Lantern:
 - 1. New:
 - a) Provide at each entrance to indicate travel direction of arriving car.
 - b) Illuminate up or down LED lights and sound tone once for up and twice for down direction prior to car arrival at floor.
 - c) Illuminate light until the car doors start to close.
 - d) Sound level shall be adjustable from 20-80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor.
 - e) Provide advanced predictive hall lantern notification to comply with ADA hall call notification time.
 - f) Provide adjustable car door dwell time to comply with ADA requirements relative to hall call notification time.
 - g) Hall direction lenses shall be arrow shaped with faceplates.
 - h) Lenses shall be minimum 2½" in their smallest dimension.
 - i) Coordinate installation locations with Purchaser .
- B. Hall Position Indicator:
 - 1. New:

- a) Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 2½" high to indicate floor served and direction of car travel.
 - b) Mount integral with hall lanterns at floors That currently have them.
- C. Car Position Indicator:
- 1. New:
 - a) Alpha-numeric digital indicator type.
 - b) Floor designations and direction arrows a minimum of 2" high to indicate floor served and direction of car travel.
 - c) Vandal resistant fixture and faceplate.
 - d) Locate above car operating panel.
 - e) When a car leaves or passes a floor, illuminate indication representing position of car in hoistway.
 - f) Illuminate proper direction arrow to indicate direction of travel.

4.12 SIGNAL FIXTURE FACEPLATE FINISHES

- A. All Fixtures:
- 1. Stainless steel satin finish.

PART 5 – EXECUTION

5.1 SITE CONDITION INSPECTION

- A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.
- B. Inform Owner of any irregularities in writing prior to commencing work.
- C. Do not proceed with installation until work in place conforms to project requirements.

5.2 INSTALLATION

- A. Install all equipment as follows:
 - 1. in accordance with Contractor's instructions, referenced codes, specifications, and approved submittals.
 - 2. with clearances in accordance with referenced codes, and specifications.
 - 3. to be easily maintained and/or removed.
 - 4. to afford maximum accessibility, safety, and continuity of operation.
- B. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel.
 - 1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
 - 2. Machine room equipment, and pit equipment.
 - 3. Neatly touch up damaged factory-painted surfaces with original paint color.
 - 4. Protect machine-finish surfaces against corrosion.

- C. Paint machine room and pit floors.

5.3 FIELD QUALITY CONTROL

- A. Work at jobsite will be checked during course of installation. Full cooperation with reviewing personnel is mandatory. Accomplish corrective work required prior to performing further installation.
- B. Perform complete "Acceptance" level pre-testing as specified in the latest edition of ASME A17.2 "Guide for Inspection of Elevators, Escalators, and Moving Walks" prior to AHJ witnessed acceptance testing. Complete any adjustments, repairs, or replacements necessary to achieve code compliant operation including but not limited to:
 - 1. Car emergency communications. Inform Owner and Consultant of any noted failures of Owner provided and maintained equipment or systems.
 - 2. Car buffers.
 - 3. Phase I and II Firefighters' Emergency Operation. Phase I initiated by smoke sensing devices.
 - 4. Power car door operation including door closing force, reopening device, and restricted opening.
- C. Have Code Authority acceptance inspection performed and complete corrective work.
- D. Provide access to installed equipment and elevator personnel assistance for Consultant's final observation and review requirements.

5.4 ADJUSTMENTS

- A. Static balance car to equalize pressure of guide shoes on guide rails.
- B. Verify that weights of existing or altered cars do not exceed total weights indicated on approved submittals. See Section 01 30 00, Submittals.
- C. Lubricate all equipment in accordance with Contractor's instructions.
- D. Adjust motors, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

5.5 CLEANUP

- A. Keep work areas orderly and free from debris during progress of project. Remove packaging materials daily.
- B. Elevator hoistways and all equipment therein shall be cleaned and left free of rust, filings, welding slag, rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust, including walls, building beams, sill ledges, and hoistway divider beams.
- C. Care shall be to not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
- D. Clean down surfaces and areas which require final painting and finishing work. Cleaning includes removal of rubbish, broom cleaning of floors, removal of any loose plaster or mortar, dust, and other extraneous materials from finish surfaces, and surfaces which will remain visible after the work is complete.
- E. Remove all loose materials and filings resulting from work.
- F. Clean machine room equipment and floor.

G. Clean car, car enclosure, entrances, operating and signal fixtures.

5.6 FINAL COMPLIANCE REVIEW

A. See SECTION 01 70 00 – FINAL CONTRACT COMPLIANCE REVIEW.

END OF SECTION

SECTION 154000 - ROOF DRAINS

1. PART 1 - GENERAL

1.1. RELATED DOCUMENTS:

- A. Documents affecting work of this Section include, but are not necessarily limited to, General Requirements, bidding documents, Flexible Flashing and Sheet Metal and drawings.

1.2. GENERAL:

- A. Existing drains will be re-worked, re-flashed, and deteriorated components replaced.
- B. At start of each workday, drains within daily work area shall be plugged. Plugs to be removed at end of each workday or before arrival of inclement weather
- C. All drains will require new flashing lead.
- D. New drains to be installed as directed by building owner's representative.
- E. Roof Areas to be covered under this section: Metal Deck Areas

2. PART 2 - PRODUCTS

2.1. DRAIN ACCESSORIES

- A. Replacement parts should be from same manufacturer of original drain.
- B. New drains, when required, should be appropriate for existing conditions. Acceptable drain manufacturer's are:
 - 1 Zurn, Erie, PA
 - 2 Smith, Montgomery, Alabama
 - 3 Josam, Michigan City, Indiana
- C. Metal flashing:
 - 1 ASTM B29-79(1984), four lb. sheet lead.
 - 2 Soft copper drain flashing sheet.
- D. Bitumen Stop: If bitumen stops are required (refer to detail drawing), see Flexible Flashing and Sheet Metal Requirements.

3. PART 3 - EXECUTION

3.1. DRAINS

- A. Existing drains
 - 1 Remove flashing collar. Clean. If broken, replace.
 - 2 Install tapered edge strip around drain to create 48 x 48 inch sump. Miter corners. Seal top of tapered edge to drain rim with fiberglass mesh embedded between alternate courses of asphalt mastic.
 - 3 Install multi-ply roofing or stripping plies into sump and onto drain rim (refer to detail drawing).

- 4 Apply 1/16 inch uniformly thick layer of asphalt mastic to surface receiving lead flashing.
- 5 Set single piece lead flashing (30" square minimum) in mastic centered over drain, extend lead six inches beyond drain rim. Neatly dress lead with wood block.
- 6 Prime lead with asphalt primer and allow to dry.
- 7 Install two plies fiberglass roof ply embedded in alternate courses of specified membrane adhesive over primed lead. Stripping plies shall extend two and four inches beyond edge of lead.
- 8 Reclamp flashing collar to drain in bed of mastic. If bolts are broken, drill and retap. If ladder clamps are installed, replace missing clamps.
- 9 Neatly cut lead within drain at rim, remove.
- 10 Install strainer.
- 11 Install bitumen stop where coal tar floodcoat is to be used (see detail drawing).

B. New Drains:

- 1 Locate and install drain body in locations specified by owner's representative.
- 2 Install tapered edge strip around drain to create 48 x 48 inch sump. Miter corners. Seal top of tapered edge to drain rim with fiberglass mesh embedded between alternate courses of asphalt mastic.
- 3 Install multi-ply roofing or stripping plies into sump and onto drain rim (refer to detail drawing).
- 4 Apply 1/16 inch uniformly thick layer of asphalt mastic to surface receiving lead flashing.
- 5 Set single piece lead flashing (30" square minimum) in mastic centered over drain, extend lead six inches beyond drain rim. Neatly dress lead with wood block.
- 6 Prime lead with asphalt primer.
- 7 Install two plies fiberglass roof ply embedded in alternate courses of hot melt adhesive over primed lead. Stripping plies shall extend two and four inches beyond edge of lead.
- 8 Reclamp flashing collar to drain in bed of mastic. If bolts are broken, drill and retap. If ladder clamps are installed, replace clamps.
- 9 Neatly cut lead within drain at rim, remove.
- 10 Seal/plug drain to prevent water entry until service connection is completed

C. Service Connection:

- 1 Locate new piping to include as few bends as possible. Do not overload any existing pipe and drain, ensure balanced disposal of all rain water. Make adequate provisions for thermal movement of all piping.
- 2 Provide cleanouts at elbows under each drain, and at tops and bottoms of each vertical run, at connection to storm sewer, as called for by Plumbing Code, and as required to make sure that drainage system can be cleaned anywhere, if needed. Provide and install access panels if required for service cleanouts.

- 3 Where new work joins old, provide all necessary materials, repairs, changes, and associated work as needed for proper connections.
- 4 Make all connections watertight.
- 5 Remove seal/plug and install strainer.
- 6 Use insulation on all pipes and fittings from drains to existing down- pipes. Ensure full continuity of insulation over pipes, fitting, and connections. Provide concealed saddles at all hangers.

END OF SECTION 154000

**SECTION 230513
COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General construction and requirements.
- B. Applications.

1.02 REFERENCE STANDARDS

- A. NEMA MG 1 - Motors and Generators; 2024.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

1.04 QUALITY ASSURANCE

- A. Comply with NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL CONSTRUCTION AND REQUIREMENTS

- A. Construction:
 - 1. Open drip-proof type except where specifically noted otherwise.
 - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
 - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- B. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- C. Wiring Terminations:
 - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
 - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.02 APPLICATIONS

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 230553
IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nameplates.
- B. Tags.

1.02 REFERENCE STANDARDS

- A. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS

- A. Air Handling Units: Nameplates.
- B. Air Terminal Units: Tags.
- C. Control Panels: Nameplates.
- D. Instrumentation: Tags.

2.02 NAMEPLATES

- A. Letter Color: White.
- B. Letter Height: 1/4 inch (6 mm).
- C. Background Color: Black.
- D. Plastic: Comply with ASTM D709.

2.03 TAGS

- A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch (40 mm) diameter.
- B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.

PART 3 EXECUTION

3.01 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.

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.

END OF SECTION

SECTION 230593
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Testing, adjustment, and balancing of air systems.
- B. Commissioning activities.

1.02 RELATED REQUIREMENTS

- A. Section 019113 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.
- B. Section 230800 - Commissioning of HVAC.

1.03 REFERENCE STANDARDS

- A. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2024.
- B. 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. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
 - 2. 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.

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. Fire and volume dampers are in place and open.
 8. Air coil fins are cleaned and combed.
 9. Access doors are closed and duct end caps are in place.
 10. Air outlets are installed and connected.
 11. Duct system leakage is minimized.

3.03 ADJUSTMENT TOLERANCES

- A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
- B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.

3.04 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. Measure air quantities at air inlets and outlets.
- C. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
- D. 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.
- E. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
- F. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.
- G. 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.
- H. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
- I. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
- J. 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.
- K. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

- L. On fan powered VAV boxes, adjust air flow switches for proper operation.

3.05 COMMISSIONING

- A. See Sections 019113 - General Commissioning Requirements and 230800 for additional requirements.
- B. Perform prerequisites prior to starting commissioning activities.
- C. Fill out Prefunctional Checklists for:
 - 1. Air side systems.
 - 2. Water side systems.
- D. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.
- E. Re-check minimum outdoor air intake flows and maximum and intermediate total airflow rates for ____ percent of the air handlers plus a random sample equivalent to ____ percent of the final TAB report data as directed by Commissioning Authority.
 - 1. Original TAB agency shall execute the re-checks, witnessed by the Commissioning Authority.
 - 2. Use the same test instruments as used in the original TAB work.
 - 3. Failure of more than 10 percent of the re-checked items of a given system shall result in the rejection of the system TAB report; rebalance the system, provide a new system TAB report, and repeat random re-checks.
 - 4. For purposes of re-check, failure is defined as follows:
 - a. Air Flow of Supply and Return: Deviation of more than 10 percent of instrument reading.
 - b. Minimum Outside Air Flow: Deviation of more than 20 percent of instrument reading; for inlet vane or VFD OSA compensation system using linear proportional control, deviation of more than 30 percent at intermediate supply flow.
 - c. Temperatures: Deviation of more than one degree F (0.5 degree C).
 - d. Air and Water Pressures: Deviation of more than 10 percent of full scale of test instrument reading.
 - e. Sound Pressures: Deviation of more than 3 decibels, with consideration for variations in background noise.
 - 5. For purposes of re-check, a whole system is defined as one in which inaccuracies will have little or no impact on connected systems; for example, the air distribution system served by one air handler or the hydronic chilled water supply system served by a chiller or the condenser water system.
- F. In the presence of the Commissioning Authority, verify that:
 - 1. Final settings of all valves, splitters, dampers and other adjustment devices have been permanently marked.
 - 2. The air system is being controlled to the lowest possible static pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from fan to diffuser having all balancing dampers wide open and that during full cooling of all terminal units taking off downstream of the static pressure sensor, the terminal unit on the critical leg has its damper 90 percent or more open.
 - 3. The water system is being controlled to the lowest possible pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from the pump to the coil having all balancing valves wide open and that during full cooling the cooling coil valve of that leg is 90 percent or more open.

3.06 SCOPE

- A. Test, adjust, and balance the following:
 - 1. Packaged Roof Top Heating/Cooling Units.

2. Air Terminal Units.

3.07 MINIMUM DATA TO BE REPORTED

- A. Electric Motors:
 1. Manufacturer.
 2. Model/Frame.
 3. HP/BHP.
 4. Phase, voltage, amperage; nameplate, actual, no load.
 5. RPM.
- B. Terminal Unit Data:
 1. Manufacturer.
 2. Type, constant, variable, single, dual duct.
 3. Identification/number.
 4. Location.
 5. Model number.
 6. Size.
 7. Minimum static pressure.
 8. Minimum design air flow.
 9. Maximum design air flow.
 10. Maximum actual air flow.
 11. Inlet static pressure.
- C. Air Distribution Tests:
 1. Air terminal number.
 2. Room number/location.
 3. Terminal size.
 4. Design velocity.
 5. Design air flow.
 6. Test (final) velocity.
 7. Test (final) air flow.
 8. Percent of design air flow.

END OF SECTION

**SECTION 230800
COMMISSIONING OF HVAC**

PART 1 GENERAL

1.01 SUMMARY

- A. See Section 019113 - General Commissioning Requirements for overall objectives; comply with the requirements of Section 019113.
- B. This section covers the Contractor's responsibilities for commissioning; each subcontractor or installer responsible for the installation of a particular system or equipment item to be commissioned is responsible for the commissioning activities relating to that system or equipment item.
- C. The Commissioning Provider (CP) directs and coordinates all commissioning activities and provides Prefunctional Checklists and Functional Test Procedures for Contractor's use.
- D. The following HVAC equipment is to be commissioned, including commissioning activities for the following specific items:
 - 1. BMS.
 - 2. Rooftop Units
 - 3. Fan Powered Boxes units.
 - 4. Other HVAC equipment necessary to verify BMS monitoring and alarms.
 - 5. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.
- E. The Prefunctional Checklist and Functional Test requirements specified in this section are in addition to, not a substitute for, inspection or testing specified in other sections.

1.02 RELATED REQUIREMENTS

- A. Section 017800 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.
- B. Section 019113 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.
- C. Section 230923 - Direct-Digital Control System for HVAC.
- D. Section 230993 - Sequence of Operations for HVAC Controls.

1.03 SUBMITTALS

- A. Updated Submittals: Keep the Commissioning Provider informed of all changes to control system documentation made during programming and setup; revise and resubmit when substantial changes are made.
- B. Startup Reports, Prefunctional Checklists, and Trend Logs: Submit for approval of Commissioning Provider.
- C. The following list outlines the general sequence of events for submittals and commissioning:
 - 1. Submit product data and Shop Drawings and receive approval.
 - 2. Submit BMS logic documentation and receive approval.
 - 3. Submit background graphic screens and receive approval.
 - 4. Submit Start-Up Checklists and manufacturer's start-up procedures for all equipment provided by the Contractor.
 - 5. Install BMS.
 - 6. Submit BMS Start-Up Test Agenda and Schedule for review.
 - 7. Receive BMS Startup Test Agenda and Schedule approval.
 - 8. Submit calibration certifications for verification equipment.
 - 9. Simulate sequencing and debug program off-line to the extent practical.
 - 10. Place systems under BMS control where applicable during a scheduled event.
 - 11. Perform BMS Startup during a scheduled event.

12. Prepare and initiate trend log data storage and format trend graphs.
13. Submit completed BMS Start-Up Reports and initial draft of the Operating and Maintenance (O&M) Manuals.
14. Receive BMS Startup Report approval and approval to schedule Demonstrations and Commissioning.
15. Demonstrate systems to Owner's representative.
16. Submit Trend Logs in electronic format specified.
17. Receive demonstration approval and approval to schedule Acceptance Period.
18. Train Owner on BMS operation and maintenance.
19. Begin Acceptance Phase.
20. Perform Functional Performance Testing including point to point verification to graphical interface.
21. Receive Acceptance Period approval, which is Functional Completion for the BMS.
22. Train Owner on final sequences and modes of operation.
23. Provide Level 1 (view only) password access to the Owner.
24. Revise and submit Record Drawings and O&M Manuals.
25. Provide Admin level access to Owner.
26. Final Acceptance.
27. Begin Warranty Phase.
28. Schedule and begin Opposite Season acceptance period.
29. Receive Opposite Season acceptance period approval.
30. Submit Record Drawings and O&M Manuals.
31. Complete Owner Training.
32. End-of-Warranty date/period.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

PART 3 EXECUTION

3.01 PREPARATION

- A. Cooperate with the Commissioning Provider in development of the Prefunctional Checklists and Functional Test Procedures.
- B. Furnish additional information requested by the Commissioning Provider.
- C. Put all HVAC equipment and systems into operation and continue operation during each working day of testing, adjusting, and balancing and commissioning, as required.

3.02 INSPECTING AND TESTING - GENERAL

- A. Submit startup plans, startup reports, and Prefunctional Checklists for each item of equipment or other assembly to be commissioned.
- B. Perform the Functional Tests directed by the Commissioning Provider for each item of equipment or other assembly to be commissioned.
- C. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.

3.03 BMS START-UP TESTING, ADJUSTING, CALIBRATION

- A. Work and/or systems installed under this Division shall be fully functioning prior to Demonstration and Acceptance Phase. Contractor shall start, test, adjust, and calibrate all work and/or systems under this Contract, as described below:
1. Inspect the installation of all devices. Review the manufacturer's installation instructions and validate that the device is installed in accordance with them.
 2. Verify proper electrical voltages and amperages and verify that all circuits are free from faults.
 3. Test, calibrate, and set all digital and analog sensing and actuating devices. Calibrate each instrumentation device by making a comparison between the BMS display and the reading at the device, using an instrument traceable to the National Bureau of Standards, which shall be at least twice as accurate as the device to be calibrated (e.g., if field device is ± 0.5 percent accurate, test equipment shall be ± 0.25 percent accurate over same range). Record the measured value and displayed value for each device in the BMS Start-up Report.
 4. Check and set zero and span adjustments for all transducers and transmitters.
 5. Check each digital control point by making a comparison between the control command at the CU and the status of the controlled device. Check each digital input point by making a comparison of the state of the sensing device and the Operator Interface display. Record the results for each device in the BMS Start-Up Report.
 6. For outputs to reset other manufacturer's devices (for example, VSDs) and for feedback from them, calibrate ranges to establish proper parameters. Coordinate with representative of the respective manufacturer and obtain their approval of the installation.
 7. Verify proper sequences by using the approved checklists to record results and submit with BMS Start-Up Report. Verify proper sequence and operation of all specified functions.
 8. Verify that all safety devices trip at appropriate conditions. Adjust setpoints accordingly.
 9. Tune all control loops to obtain the fastest stable response without hunting, offset or overshoot. Record tuning parameters and response test results for each control loop in the BMS Start-up Report. Except from a startup, maximum allowable variance from set point for controlled variables under normal load fluctuations shall be as follows. Within 3 minutes of any upset (for which the system has the capability to respond) in the control loop, tolerances shall be maintained (exceptions noted):
 - a. Space Temperature: ± 1 degrees F within 30 minutes].
 - b. Space Humidity: ± 5 percent within 30 minutes].
 10. For interface and DDC control panels:
 - a. Ensure devices are properly installed with adequate clearance for maintenance and with clear labels in accordance with the Record Drawings.
 - b. Ensure that terminations are safe, secure and labeled in accordance with the Record Drawings.
 - c. Check power supplies for proper voltage ranges and loading.
 - d. Ensure that wiring and tubing are run in a neat and workman-like manner, either bound or enclosed in trough.
 - e. Check for adequate signal strength on communication networks.
 - f. Check for standalone performance of controllers by disconnecting the controller from the LAN. Verify the event is annunciated at Operator Interfaces. Verify that the controlling LAN reconfigures as specified in the event of a LAN disconnection.
 - g. Ensure that all outputs and devices fail to their proper positions/states.
 - h.
 - i. With all system and communications operating normally, sample and record update/annunciation times for critical alarms fed from the panel to the Operator Interface.
 - j. Check for proper grounding of all DDC panels and devices.
 11. Low voltage and high voltage wiring must not be housed in the same conduit. BMS wiring and fire alarm wiring must not be housed in the same conduit. For Operator Interfaces:

- a. Verify that all elements on the graphics are functional and are properly bound to physical devices and/or virtual points, and that hot links or page jumps are functional and logical.
 - b. Output all specified BMS reports for review and approval.
 - c. Verify that the alarm printing and logging is functional and per requirements.
 - d. Verify that trends are archiving to disk and provide a sample to the Owner for review. Analog trends are not acceptable.
 - e. Verify that dial-out/BAC alarm annunciation is functional, end to end.
 - f. Verify the functionality of remote Operator Interfaces and that a robust connection can be established consistently.
 - g. Verify that required third party software applications required with the bid are installed and are functional.
- B. Submit Start-Up Test Report: Report shall be completed, submitted, and approved prior to start of functional testing.

3.04 CONTROL SYSTEM FUNCTIONAL TESTING

- A. Prefunctional Checklists for control system components will require a signed and dated certification that all system programming is complete as required to accomplish the requirements of Contract Documents and the detailed Sequences of Operation documentation submittal.
- B. Do not start Functional Testing until all controlled components have themselves been successfully Functionally Tested in accordance with Contract Documents.
- C. Using a skilled technician who is familiar with this building, execute the Functional Testing of the control system as required by the Commissioning Provider.
- D. Functional Testing of the control system constitutes demonstration and trend logging of control points monitored by the control system.
 1. The scope of trend logging is partially specified; trend log up to 50 percent more points than specified at no extra cost to Owner.
 2. Perform all trend logging specified in Prefunctional Checklists and Functional Test procedures.
- E. Functionally Test integral or stand-alone controls in conjunction with the Functional Tests of the equipment they are attached to, including any interlocks with other equipment or systems; further testing during control system Functional Test is not required unless specifically indicated below.
 1. Provide vendor factory trained technicians to support functional testing as follows:
 - a. CRAC units and ceiling hung units, Liebert technician, 3 days.
 - b. Rooftop and ceiling hung units, Trane technician, 3 days.
 - c. Rooftop unit, Seans-4, 1 day.
- F. Demonstrate the following to the Commissioning Provider during testing of controlled equipment; coordinate with commissioning of equipment.
 1. Setpoint changing features and functions.
 2. Sensor calibrations.
 3. Monitoring and alarm functions.
- G. Demonstrate to the Commissioning Provider:
 1. That all specified functions and features are set up, debugged and fully operable.
 2. That scheduling features are fully functional and setup, including holidays.
 3. That all graphic screens and value readouts are completed.
 4. Correct date and time setting in central computer.
 5. That field panels read the same time as the central computer; sample 10 percent of field panels; if any of those fail, sample another 10 percent; if any of those fail test all remaining units at no extra cost to Owner.

6. Functionality of field panels using local operator keypads and local ports (plug-ins) using portable computer/keypad; demonstrate 100 percent of panels and 10 percent of ports; if any ports fail, sample another 10 percent; if any of those fail, test all remaining units at no extra cost to Owner.
 7. Power failure and battery backup and power-up restart functions.
 8. Global commands features.
 9. Security and access codes.
 10. Occupant over-rides (manual, telephone, key, keypad, etc.).
 11. O&M schedules and alarms.
 12. Occupancy sensors and controls.
 13. All control strategies and sequences not tested during controlled equipment testing.
- H. If the control system, integral control components, or related equipment do not respond to changing conditions and parameters appropriately as expected, as specified and according to acceptable operating practice, under any of the conditions, sequences, or modes tested, correct all systems, equipment, components, and software required at no additional cost to Owner.

3.05 BMS DEMONSTRATION

- A. All BMS Demonstration shall take place on the main Control Systems Server. Schedule to add system to main Control Systems Server with Owner and Commissioning Provider at least two (2) weeks in advance of the demonstration. At the time of request, provide all documentation that the following criteria are met:
1. Updated BMS submittals in electronic and hard copy to Owner including the updated riser diagram for the system.
 2. Reports on verification of Network Layout Verification including but not limited to Building Controller locations, cable routes with length of cable between controllers and any trunk extenders or trunk isolators.
 3. Reports on verification of electrical characteristics of BMS network, communications and electrical integrity of Building Controllers.
 4. Reports on verification of traffic on BMS Network including but not limited to COVs between Building Controllers, point commands by the operator, point commands by program across the network, alarm reporting on the network, any unresolved points in the system, integrity of the ports on any Building Controller isolator/extender and results of Building Controller tests running at selected baud rate.
 5. Demonstrate to Owner the updates of databases without errors or faults between the temporary Control Systems Server and Building Controllers. If there is no temporary server, demonstrate to Owner after system is added to main Control Systems Server.
 6. Reports on verification of system log files, interruption of log files of system traffic and overall acceptable operation of the system where a temporary Control Systems Server is utilized.
- B. Demonstrate the operation of the BMS hardware, software, and all related components and systems to the satisfaction of the Owner. Schedule the demonstration with the Owner seven (7) calendar days in advance. Demonstration shall not be scheduled until all hardware and software submittals, and the Start-Up Test Report, are approved. If the Work fails to conform to the Contract Documents, Contractor shall schedule an additional Site visit with the Owner and Commissioning Provider for re-demonstration.
- C. The Contractor shall supply all personnel and equipment for the demonstration, including, but not limited to, instruments, ladders, etc. Contractor-supplied personnel must be competent with and knowledgeable of all project-specific hardware, software, and HVAC systems. Either qualified or certified technician acting as the company's SME are required to facilitate the operations of the system's performance. All training documentation and submittals shall be maintained at the Project Site.

- D. Demonstration shall typically involve small representative samples of systems/equipment randomly selected by the Owner or Commissioning Provider.
- E. The system shall be demonstrated following the same procedures used in the Start-Up Test by using the approved Commissioning Checklists. Demonstration shall include, but not necessarily be limited to, the following:
 - 1. Demonstrate that required software is installed on BMS workstations. Demonstrate that graphic screens, alarms, trends, and reports are installed as submitted and approved.
 - 2. Demonstrate that points specified and shown can be interrogated and/or commanded (as applicable) from all workstations, as specified.
 - 3. Demonstrate that remote dial-up communication abilities are in accordance with these Specifications.
 - 4. Demonstrate correct calibration of input/output devices using the same methods specified for the Start-Up Tests. A maximum of 10 percent of I/O points shall be selected at random by the Owner for demonstration. Upon failure of any device to meet the specified end-to-end accuracy, an additional 10 percent of I/O points shall be selected at random by Owner for demonstration. This process shall be repeated until 100 percent of randomly selected I/O points have been demonstrated to meet specified end-to-end accuracy.
 - 5. Demonstrate that all DDC and other software programs exist at respective field panels. The Direct Digital Control (DDC) programming and point database shall be as submitted and approved.
 - 6. Demonstrate that all DDC programs accomplish the specified sequence of operation.
 - 7. Demonstrate that the panels and DDC network of panels automatically recover from power failures within five (5) minutes after power is restored.
 - 8. Demonstrate that the stand-alone operation of panels meets the requirements of these Specifications. Demonstrate that the panels' response to LAN communication failures meets the requirements of these Specifications.
 - 9. Demonstrate that required trend graphs and trend logs are set up per the requirements. Provide a sample of the data archive. Indicate the file names and locations.
- F. BMS Demonstration shall be completed and approved prior start of functional testing.
- G. Any tests successfully completed during the demonstration will be recorded as passed for the functional performance testing and will not have to be retested.

3.06 BMS ACCEPTANCE PERIOD

- A. After approval of the BMS Demonstration and prior to Contract Close-out, the Acceptance Phase shall commence. Acceptance Period shall not be scheduled until all HVAC systems are in operation and have been accepted. Acceptance Period and its approval may be performed on a system by-system basis if mutually agreed by the Contractor, Commissioning Provider and Owner.
- B. Operational Test: At the beginning of the Acceptance Phase, the system shall operate properly for two (2) weeks without malfunction, without alarm caused by control action or device failure, and with smooth and stable control of systems and equipment in conformance with these Specifications. At the end of the two weeks, Contractor shall forward the trend logs to the Owner for review. Owner shall determine if the system is ready for functional performance testing and document any problems requiring Contractor's attention.
 - 1. If the systems are not ready for functional performance testing, Contractor shall correct problems and provide notification to the Owner that all problems have been corrected. The Acceptance Period shall be restarted at a mutually scheduled time for an additional one-week period.
 - 2. This process shall be repeated until Owner issues notice that the BMS is ready for functional performance testing.
- C. During the Acceptance Period, the Contractor shall maintain a hard copy log of all alarms generated by the BMS. For each alarm received, Contractor shall diagnose the cause of the alarm, and shall list on the log for each alarm, the diagnosed cause of the alarm, and the

corrective action taken. If in the Contractor's opinion, the cause of the alarm is not the responsibility of the Contractor, Contractor shall immediately notify the Owner.

3.07 TREND LOGS

- A. Contractor shall configure and analyze all trends for points identified in the Contract Documents points lists.

3.08 TREND GRAPHS

- A. Trend graphs shall be configured for all points identified in the Contract Documents points lists shall generally be used during the Acceptance Phase to facilitate and document testing. Prepare controller and workstation software to display graphical format trends during the Acceptance Period. Trend graphs shall demonstrate compliance with Contract Documents.
- B. Each graph shall be clearly labeled with HVAC subsystem title, date, and times.

3.09 OPERATION AND MAINTENANCE MANUALS

- A. See Section 017800 for additional requirements.
- B. Submit manuals related to items that were commissioned to Commissioning Provider for review; make changes recommended by Commissioning Provider.
- C. Commissioning Provider will add commissioning records to manuals after submission to Owner.

3.10 DEMONSTRATION AND TRAINING

- A. Demonstrate operation and maintenance of HVAC system to Owner' personnel; if during any demonstration, the system fails to perform in accordance with the information included in the O&M manual, stop demonstration, repair or adjust, and repeat demonstration. Demonstrations may be combined with training sessions if appropriate.
- B. These demonstrations are in addition to, and not a substitute for, Prefunctional Checklists and demonstrations to the Commissioning Provider during Functional Testing.
- C. Provide classroom and hands-on training of Owner's designated personnel on operation and maintenance of the HVAC system, control system, and all equipment items indicated to be commissioned. Provide the following minimum durations of training:
 - 1. HVAC Control System: 48 hours.
 - 2. Computer Room AC Units: 8 hours.
- D. HVAC Control System Training: Perform training in at least three phases:
 - 1. Phase 1 - Basic Control System: Provide minimum of 32 hours of actual training on the control system itself. Upon completion of training, each attendee, using appropriate documentation, should be able to perform elementary operations and describe general hardware architecture and functionality of the system.
 - a. This training may be held on-site or at the manufacturer's facility.
 - b. If held off-site, the training may occur prior to final completion of the system installation.
 - 2. Phase 2 - Integrating with HVAC Systems: Provide minimum of 8 hours of on-site, hands-on training after completion of Functional Testing. Include instruction on:
 - a. The specific hardware configuration of installed systems in this facility and specific instruction for operating the installed system, including interfaces with other systems, if any.
 - b. Security levels, alarms, system start-up, shut-down, power outage and restart routines, changing setpoints and alarms and other typical changed parameters, overrides, freeze protection, manual operation of equipment, optional control strategies that can be considered, energy savings strategies and set points that if changed will adversely affect energy consumption, energy accounting, procedures for obtaining vendor assistance, etc.
 - c. Trend logging and monitoring features (values, change of state, totalization, etc.), including setting up, executing, downloading, viewing both tabular and graphically

- and printing trends; provide practice in setting up trend logging and monitoring during training session.
- d. Every display screen, allowing time for questions.
 - e. Point database entry and modifications.
3. Phase 3 - Post-Occupancy: Six months after occupancy conduct minimum of 8 hours of training. Tailor training session to questions and topics solicited beforehand from Owner. Also be prepared to address topics brought up and answer questions concerning operation of the system.
- E. Provide the services of manufacturer representatives to assist instructors where necessary.
 - F. Provide the services of the HVAC controls instructor at other training sessions, when requested, to discuss the interaction of the controls system as it relates to the equipment being discussed.

3.11 WARRANTY PHASE BMS OPPOSITE SEASON TRENDING AND TESTING

- A. Trending: Throughout the Warranty Phase, trend logs shall be maintained. Contractor shall forward archive trend logs to the Owner for review upon Owner request. Owner will review these and notify Contractor of any warranty work required.
- B. Opposite Season Testing: Within twelve (12) months of Substantial Completion, Contractor shall schedule and conduct, with Owner, Opposite Season functional performance testing. BMS Provider shall participate in this testing and remedy any deficiencies identified.

END OF SECTION

**SECTION 230923
DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. System description.
- B. Controllers.
- C. System software.
- D. Controller software.

1.02 RELATED REQUIREMENTS

- A. Section 230913 - Instrumentation and Control Devices for HVAC.
- B. Section 230993 - Sequence of Operations for HVAC Controls.
- C. Section 260583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for each system component and software module.
- C. Shop Drawings:
 - 1. Indicate trunk cable schematic showing programmable control unit locations, and trunk data conductors.
 - 2. Indicate system graphics indicating monitored systems, data (connected and calculated) point addresses, and operator notations. Provide demonstration digital media containing graphics.
 - 3. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
 - 4. Indicate description and sequence of operation of operating, user, and application software.
- D. Project Record Documents: Record actual locations of control components, including control units, panels, thermostats, and sensors.
 - 1. Provide electronic copies of the as-built drawings and the operation and maintenance manuals to PM and PD&C.
 - 2. Revise shop drawings to reflect actual installation and operating sequences.
 - 3. Include submittals data in final "Record Documents" form.
- E. Operation and Maintenance Data:
 - 1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
 - 2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
 - 3. Provide three (3) complete operation and maintenance manuals to the general contractor who will forward them to the Operations Manager. A copy of the submittal letter shall be sent to the general contractor, mechanical contractor, and the Project Manager, for information only.
 - 4. A complete list of materials, quantities, and model numbers.

5. Complete troubleshooting procedures, diagrams, and guidelines. Manuals shall include general notes, wiring legends, floor plans with device layout, mechanical equipment, diagrams per enclosure locations and network and telephone lines indicated.
 6. A floor plan shall be provided showing all hardwired control points. Floor plans shall include the enclosure to which the cable is being pulled from, the cable type, and quantity.
 7. Cut sheet and specifications for all components.
 8. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
- F. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Perform work in accordance with NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.
- D. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for purpose specified and indicated.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Correct defective Work within a five year period after Substantial Completion.
- C. Provide five year manufacturer's warranty for field programmable micro-processor based units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Schneider Electric; _____: www.schneider-electric.us/#sle.
- B. Distech Controls - Niagara Framework: Advantex Solutions, 718-2
- C. Automated Logic Corporation (ALC)
- D. Trane - Niagara Interface

2.02 SYSTEM DESCRIPTION

- A. Automatic temperature control field monitoring and control system using field programmable micro-processor based units.
- B. Base system on distributed system of fully intelligent, stand-alone controllers, operating in a multi-tasking, multi-user environment on token passing network, with central and remote hardware, software, and interconnecting wire and conduit.
- C. Include computer software and hardware, operator input/output devices, control units, local area networks (LAN), sensors, control devices, actuators.
- D. Controls for variable air volume terminals, radiation, reheat coils, unit heaters, fan coils, and the like when directly connected to the control units. Individual terminal unit control is specified in Section 230913.
- E. Provide control systems consisting of thermostats, control valves, dampers and operators, indicating devices, interface equipment and other apparatus and accessories required to operate mechanical systems, and to perform functions specified.
- F. Controller and I/O equipment shall be designed to operate in ambient temperatures from 32 to 120 degrees F and relative humidity from 10 - 95% non-condensing.

- G. The installation of the BMS shall incorporate all additional components as required to make a complete and functional system. These components shall include, but not be limited to the following: relays, sensors, transducers, surge protectors, controllers, and electrical line filters.
 - 1. Existing field devices (e.g. actuators, sensors, relays, control transformers, etc.) may be used provided they are in good working condition. Existing hardware condition shall be verified.
- H. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.
- I. All safety circuits (freeze protection, high static pressure, low static pressure, etc.) shall be hardwired and perform their control safety functions independent of the BMS.

2.03 TECHNICAL HARDWARE DESCRIPTION

- A. The BMS shall be a computer based system utilizing high speed Ethernet Local Area Network (LAN) technology.
- B. All controllers shall be installed with 25% spare points (of each type) and 25% spare memory capacity for connection of floor work.
- C. BMS vendor shall test and inspect all existing devices (sensors, valves, actuators, etc) on each system before any work is done on the system and provide a report of devices or components found to be defective. Submit Unit Prices with bid for replacement of each type of device. All existing and new devices are to be covered under the system warranty.
- D. The BMS shall consist of the following:
 - 1. Network Master Control Units (NMCU)
 - a. Stand-alone NMCU panels shall be microprocessor based, multitasking, multi-user, and real time digital control processors. Each stand-alone NMCU panel shall consist of modular hardware with plug-in enclosed processors, communication controllers and power supplies. A sufficient number of controllers shall be supplied to fully meet the requirements of this specification and the point list on the drawings.
 - b. Each NMCU panel shall have sufficient memory to support its own operating system and support the necessary number of controllers required by the site.
 - c. Functions:
 - 1) Control processes
 - 2) Energy management applications
 - 3) Alarm management
 - 4) Historical/trend data for all points
 - 5) Maintenance support applications
 - 6) Custom processes
 - 7) Operator I/O
 - 8) IP connection
 - 9) Manual override monitoring
 - d. Point types: Each NMCU panel shall support the following types of point inputs and outputs:
 - 1) Digital inputs
 - 2) Digital outputs
 - 3) Analog inputs
 - 4) Analog outputs
 - 5) Supervised inputs
 - 6) Pulse inputs
 - 7) Access control reader / door input / output
 - e. Expansion
 - 1) The system shall be modular in nature, and shall permit easy expansion of both capacity and functionality through the addition of software applications, workstation hardware, field controllers, sensors, actuators, BMS panles, and

operator devices. The system architecture shall support 100% expansion capacity of all types of panels and all point types included in the initial installation.

- f. Integrated On Line Diagnostics:
 - 1) Each NMCU panel shall continuously perform self-diagnostics, communication diagnosis, and diagnosis of all subsidiary equipment. The NMCU panel shall provide both local and remote annunciation of any detected component failures, or repeated failure to establish communication. Indication of the diagnostic results shall be provided at each NMCU panel to be alarmed at its touch screen interface or the local workstation and the Central Security monitoring workstation.
- g. Surge and Transient Protection:
 - 1) Isolation shall be provided at all network terminations, as well as all field point terminations to suppress induced voltage transients consistent with Institute of Electrical and Electronics Engineers (IEEE) Standard 587-1980. Isolation levels shall be sufficiently high as to allow all signal wiring to be run in the same conduit as high voltage wiring where acceptable by electrical code.
- h. Power Fail Restart:
 - 1) In the event of the loss of inverter power the sites configured with the fail safe standard shall automatically switch over to the secondary emergency, generator or normal power. If all power is lost there shall be an orderly shutdown of all stand-alone BMS panels as determined by the sequence and design of the equipments power source. Non-Volatile memory shall be incorporated for all critical controller configuration data, and battery backup shall be provided to support the real-time clock and all volatile memory for a minimum two (2) hours. Upon restoration of normal power, the NMCU panel shall automatically resume full operation without manual intervention. Should NMCU panel memory be lost for any reason, the user shall have the capability of reloading the NMCU panel via the local area network workstation.
 - 2) A battery fail alarm shall be provided from the BMS UPS system to the NMCU panel.
- i. NMCU Software Features:
 - 1) The software programs specified in this section shall be provided as an integral part of the NMCU panel and shall not be dependent upon any higher-level computer for execution.
 - 2) Pre-Tested Control Algorithms: The NMCU panels shall have the ability to perform the following pre-tested control algorithms:
 - (a) Proportional, Integral plus Derivative (PID) control
 - (b) Self-tuning PID
 - (c) Two position control
 - (d) Ratio calculator
 - (e) Equipment cycling protection
 - (f) Power metering (as required)
 - (g) Demand monitoring interface
 - (h) Digital filter
 - 3) Mathematical functions:
 - (a) Each controller shall be capable of performing basic mathematical functions (+, -, *, /), squares, square roots, exponential, logarithms, Boolean logic statements, or combinations of both. The controllers shall be capable of performing complex logical statements including operators such as >, <, =, and, or, exclusive or, etc. These must be able to be used in the same equations with the mathematical operators and nested up to five parentheses deep.

- 4) Energy Management Applications: All programs shall be executed automatically without the need for operator intervention, and shall be flexible enough to allow user customizing. NMCU Panels shall have the ability to perform any or all of the following energy management routines:
 - (a) Daylight savings time reset
 - (b) Time of day scheduling
 - (c) Calendar based scheduling
 - (d) Holiday scheduling
 - (e) Temporary schedule overrides
 - (f) Optimal start
 - (g) Optimal stop
 - (h) Night setback control
 - (i) Temperature compensated load rolling
 - (j) Fan speed / CFM control
 - (k) Heating / cooling interlock
 - (l) Cold deck reset
 - (m) Condensing water reset
 - (n) Chilled water reset
 - 5) NMCU Panels shall where applicable have the ability to communicate BACnet MS/TP or BACnet IP (read only) or Modbus RTU or Modbus IP in order to accomplish 3rd party interfaces.
- E. System architectural design shall eliminate dependence upon any single device for alarm reporting and control execution. Each BMS panel shall operate independently by performing its own specified control, alarm management, operator I/O, and historical data collection. The failure of any single component or network connection shall not interrupt the execution of control strategies at other operational devices.
- F. New system and remodel projects shall include the following control hardware as defined by the scope of work.

2.04 CONTROLLERS

- A. Building Controllers:
1. General:
 - a. Manage global strategies by one or more, independent, standalone, microprocessor based controllers.
 - b. Provide sufficient memory to support controller's operating system, database, and programming requirements.
 - c. Share data between networked controllers.
 - d. Controller operating system manages input and output communication signals allowing distributed controllers to share real and virtual object information and allowing for central monitoring and alarms.
 - e. Utilize real-time clock for scheduling.
 - f. Continuously check processor status and memory circuits for abnormal operation.
 - g. Controller to assume predetermined failure mode and generate alarm notification upon detection of abnormal operation.
 - h. Communication with other network devices to be based on assigned protocol.
 - i. Each BMS panel enclosure shall be equipped with a streamlined, backlit LCD display for the controller on enclosure door to access system data. Display shall be provided with a preloaded with a visual interface to view and edit setpoints, alarms, and schedules.
 2. Communication:
 - a. Controller to reside on a BACnet network using ISO 8802-3 (ETHERNET) Data Link/Physical layer protocol.

- b. Perform routing when connected to a network of custom application and application specific controllers.
 - c. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
 - 3. Anticipated Environmental Ambient Conditions:
 - a. Outdoors and/or in Wet Ambient Conditions:
 - 1) Mount within waterproof enclosures.
 - 2) Rated for operation at 40 to 150 degrees F (4 to 65 degrees C).
 - b. Conditioned Space:
 - 1) Mount within dustproof enclosures.
 - 2) Rated for operation at 32 to 120 degrees F (0 to 50 degrees C).
 - 4. Provisions for Serviceability:
 - a. Diagnostic LEDs for power, communication, and processor.
 - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
 - 5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
 - 6. Power and Noise Immunity:
 - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
 - b. Perform orderly shutdown below 80 percent of nominal voltage.
 - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet (1 m).
- B. Application Specific Controllers:
 - 1. General:
 - a. Not fully user programmable, microprocessor based controllers dedicated to control specific equipment.
 - b. Customized for operation within the confines of equipment served.
 - c. Communication with other network devices to be based on assigned protocol.
 - 2. Communication:
 - a. Controller to reside on a BACnet network using MS/TP Data Link/Physical layer protocol.
 - b. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
 - 3. Anticipated Environmental Ambient Conditions:
 - a. Outdoors and/or in Wet Ambient Conditions:
 - 1) Mount within waterproof enclosures.
 - 2) Rated for operation at 40 to 150 degrees F (4 to 65 degrees C).
 - b. Conditioned Space:
 - 1) Mount within dustproof enclosures.
 - 2) Rated for operation at 32 to 120 degrees F (0 to 50 degrees C).
 - 4. Provisions for Serviceability:
 - a. Diagnostic LEDs for power, communication, and processor.
 - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
 - 5. Memory: In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
 - 6. Power and Noise Immunity:
 - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
 - b. Perform orderly shutdown below 80 percent of nominal voltage.
 - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 3 feet (1 m).
- C. Input/Output Interface:

1. Hardwired inputs and outputs tie into the DDC system through building, custom application, or application specific controllers.
2. All Input/Output Points:
 - a. Protect controller from damage resulting from any point short-circuiting or grounding and from voltage up to 24 volts of any duration.
 - b. Provide universal type for building and custom application controllers where input or output is software designated as either binary or analog type with appropriate properties.
3. Binary Inputs:
 - a. Allow monitoring of On/Off signals from remote devices.
 - b. Provide wetting current of 12 mA minimum, compatible with commonly available control devices and protected against the effects of contact bounce and noise.
 - c. Sense dry contact closure with power provided only by the controller.
4. Pulse Accumulation Input Objects: Comply with all requirements of binary input objects and accept up to 10 pulses per second.
5. Analog Inputs:
 - a. Allow for monitoring of low voltage 0 to 10 VDC, 4 to 20 mA current, or resistance signals (thermistor, RTD).
 - b. Compatible with and field configurable to commonly available sensing devices.
6. Binary Outputs:
 - a. Used for On/Off operation or a pulsed low-voltage signal for pulse width modulation control.
 - b. Outputs provided with three position (On/Off/Auto) override switches.
 - c. Status lights for building and custom application controllers to be selectable for normally open or normally closed operation.
7. Analog Outputs:
 - a. Monitoring signal provides a 0 to 10 VDC or a 4 to 20 mA output signal for end device control.
 - b. Provide status lights and two position (AUTO/MANUAL) switch for building and custom application controllers with manually adjustable potentiometer for manual override on building and custom application controllers.
 - c. Drift to not exceed 0.4 percent of range per year.
8. System Object Capacity:
 - a. System size to be expandable to twice the number of input output objects required by providing additional controllers, including associated devices and wiring.
 - b. Hardware additions or software revisions for the installed operator interfaces are not to be required for future, system expansions.

2.05 CONTROL POWER

- A. A dedicated UPS shall be sized appropriately and installed in each BMS panel. A network DC inverter shall not be utilized as a back-up power source for the BMS.
 1. Power wire from the UPS to each enclosure shall be #12 American Wire Gauge Thermoplastic High Heat resistant Nylon (AWG THHN) stranded.
 2. Ground wire from each UPS shall be #10 AWG THHN stranded with green insulation.
 3. No solid wire is acceptable.
 4. No power wiring shall be run with any input, output, or communications wiring conduit.

2.06 LOCAL AREA NETWORK (LAN)

- A. Provide communication between control units over local area network (LAN).
- B. LAN Capacity: Not less than 60 stations or nodes.
- C. Break in Communication Path: Alarm and automatically initiate LAN reconfiguration.
- D. LAN Data Speed: Minimum 19.2 Kb.

- E. Communication Techniques: Allow interface into network by multiple operation stations and by auto-answer/auto-dial modems. Support communication over telephone lines utilizing modems.
- F. Transmission Median: Fiber optic or single pair of solid 24 gauge twisted, shielded copper cable.
- G. Network Support: Time for global point to be received by any station, shall be less than 3 seconds. Provide automatic reconfiguration if any station is added or lost. If transmission cable is cut, reconfigure two sections with no disruption to system's operation, without operator intervention.

2.07 SYSTEM SOFTWARE

- A. Operating System:
 - 1. Concurrent, multi-tasking capability.
 - a. Common Software Applications Supported: Microsoft Excel.
 - b. Acceptable Operating Systems: _____.
 - 2. System Graphics:
 - a. Allow up to 10 graphic screens, simultaneously displayed for comparison and monitoring of system status.
 - b. Animation displayed by shifting image files based on object status.
 - c. Provide method for operator with password to perform the following:
 - 1) Move between, change size, and change location of graphic displays.
 - 2) Modify on-line.
 - 3) Add, delete, or change dynamic objects consisting of:
 - (a) Analog and binary values.
 - (b) Dynamic text.
 - (c) Static text.
 - (d) Animation files.
 - 3. Custom Graphics Generation Package:
 - a. Create, modify, and save graphic files and visio format graphics in PCX formats.
 - b. HTML graphics to support web browser compatible formats.
 - c. Capture or convert graphics from AutoCAD.
 - 4. Standard HVAC Graphics Library:
 - a. HVAC Equipment:
 - 1) Terminal HVAC Units.
 - 2) Rooftop Units.
 - b. Ancillary Equipment:
 - 1) Fans.
 - 2) Dampers.
 - 3) Ductwork.
- B. Workstation System Applications:
 - 1. Automatic System Database Save and Restore Functions:
 - a. Current database copy of each Building Controller is automatically stored on hard disk.
 - b. Automatic update occurs upon change in any system panel.
 - c. In the event of database loss in any system panel, the first workstation to detect the loss automatically restores the database for that panel unless disabled by the operator.
 - 2. Manual System Database Save and Restore Functions by Operator with Password Clearance:
 - a. Save database from any system panel.
 - b. Clear a panel database.
 - c. Initiate a download of a specified database to any system panel.

3. Software provided allows system configuration and future changes or additions by operators under proper password protection.
4. On-line Help:
 - a. Context-sensitive system assists operator in operation and editing.
 - b. Available for all applications.
 - c. Relevant screen data provided for particular screen display.
 - d. Additional help available via hypertext.
5. Security:
 - a. Operator log-on requires user name and password to view, edit, add, or delete data.
 - b. System security selectable for each operator.
 - c. System supervisor sets passwords and security levels for all other operators.
 - d. Operator passwords to restrict functions accessible to viewing and/or changing system applications, editor, and object.
 - e. Automatic, operator log-off results from keyboard or mouse inactivity during user-adjustable, time period.
 - f. All system security data stored in encrypted format.
6. System Diagnostics:
 - a. Operations Automatically Monitored:
 - 1) Workstations.
 - 2) Printers.
 - 3) Modems.
 - 4) Network connections.
 - 5) Building management panels.
 - 6) Controllers.
 - b. Device failure is annunciated to the operator.
7. Alarm Processing:
 - a. All system objects are configurable to "alarm in" and "alarm out" of normal state.
 - b. Configurable Objects:
 - 1) Alarm limits.
 - 2) Alarm limit differentials.
 - 3) States.
 - 4) Reactions for each object.
8. Alarm Messages:
 - a. Descriptor: English language.
 - b. Recognizable Features:
 - 1) Source.
 - 2) Location.
 - 3) Nature.
9. Configurable Alarm Reactions by Workstation and Time of Day:
 - a. Logging.
 - b. Printing.
 - c. Starting programs.
 - d. Displaying messages.
 - e. Dialing out to remote locations.
 - f. Paging.
 - g. Providing audible annunciation.
 - h. Displaying specific system graphics.
10. Custom Trend Logs:
 - a. Definable for any data object in the system including interval, start time, and stop time.
 - b. Trend Data:
 - 1) Sampled and stored on the building controller panel.
 - 2) Archivable on hard disk.

- 3) Retrieval for use in reports, spreadsheets and standard database programs.
 - 4) Archival on LAN accessible storage media including hard disk, tape, Raid array drive, and virtual cloud environment.
 - 5) Protected and encrypted format to prevent manipulation, or editing of historical data and event logs.
11. Alarm and Event Log:
 - a. View all system alarms and change of states from any system location.
 - b. Events listed chronologically.
 - c. Operator with proper security acknowledges and clears alarms.
 - d. Alarms not cleared by operator are archived to the workstation hard disk.
 12. Object, Property Status and Control:
 - a. Provide a method to view, edit if applicable, the status of any object and property in the system.
 - b. Status Available by the Following Methods:
 - 1) Menu.
 - 2) Graphics.
 - 3) Custom Programs.
 13. Reports and Logs:
 - a. Reporting Package:
 - 1) Allows operator to select, modify, or create reports.
 - 2) Definable as to data content, format, interval, and date.
 - 3) Archivable to hard disk.
 - b. Real-time logs available by type or status such as alarm, lockout, normal, etc.
 - c. Stored on hard disk and readily accessible by standard software applications, including spreadsheets and word processing.
 - d. Set to be printed on operator command or specific time(s).
 14. Reports:
 - a. Standard:
 - 1) Objects with current values.
 - 2) Current alarms not locked out.
 - 3) Disabled and overridden objects, points and SNVTs.
 - 4) Objects in manual or automatic alarm lockout.
 - 5) Objects in alarm lockout currently in alarm.
 - 6) Logs:
 - (a) Alarm History.
 - (b) System messages.
 - (c) System events.
 - (d) Trends.
 - b. Custom:
 - 1) Daily.
 - 2) Weekly.
 - 3) Monthly.
 - 4) Annual.
 - 5) Time and date stamped.
 - 6) Title.
 - 7) Facility name.
 - c. Tenant Override:
 - 1) Monthly report showing total, requested, after-hours HVAC and lighting services on a daily basis for each tenant.
 - 2) Annual report showing override usage on a monthly basis.
 - d. Electrical, Fuel, and Weather:
 - 1) Electrical Meter(s):

- (a) Monthly showing daily electrical consumption and peak electrical demand with time and date stamp for each meter.
 - (b) Annual summary showing monthly electrical consumption and peak demand with time and date stamp for each meter.
 - 2) Weather:
 - (a) Monthly showing minimum, maximum, average outdoor air temperature and heating/cooling degree-days for the month.
- C. Workstation Applications Editors:
 - 1. Provide editing software for each system application at PC workstation.
 - 2. Downloaded application is executed at controller panel.
 - 3. Full screen editor for each application allows operator to view and change:
 - a. Configuration.
 - b. Name.
 - c. Control parameters.
 - d. Set-points.
 - 4. Scheduling:
 - a. Monthly calendar indicates schedules, holidays, and exceptions.
 - b. Allows several related objects to be scheduled and copied to other objects or dates.
 - c. Start and stop times adjustable from master schedule.
 - 5. Custom Application Programming:
 - a. Create, modify, debug, edit, compile, and download custom application programming during operation and without disruption of all other system applications.
 - b. Programming Features:
 - 1) English oriented language, based on BASIC, FORTRAN, C, or PASCAL syntax allowing for free form programming.
 - 2) Alternative language graphically based using appropriate function blocks suitable for all required functions and amenable to customizing or compounding.
 - 3) Insert, add, modify, and delete custom programming code that incorporates word processing features such as cut/paste and find/replace.
 - 4) Allows the development of independently, executing, program modules designed to enable and disable other modules.
 - 5) Debugging/simulation capability that displays intermediate values and/or results including syntax/execution error messages.
 - 6) Support for conditional statements (IF/THEN/ELSE/ELSE-F) using compound Boolean (AND, OR, and NOT) and/or relations (EQUAL, LESS THAN, GREATER THAN, NOT EQUAL) comparisons.
 - 7) Support for floating-point arithmetic utilizing plus, minus, divide, times, square root operators; including absolute value; minimum/maximum value from a list of values for mathematical functions.
 - 8) Language consisting of resettable, predefined, variables representing time of day, day of the week, month of the year, date; and elapsed time in seconds, minutes, hours, and days where the variable values can be used in IF/THEN comparisons, calculations, programming statement logic, etc.
 - 9) Language having predefined variables representing status and results of the system software enables, disables, and changes the set points of the controller software.

2.08 CONTROLLER SOFTWARE

- A. All applications reside and operate in the system controllers and editing of all applications occurs at the operator workstation.
- B. System Security:
 - 1. User access secured via user passwords and user names.

2. Passwords restrict user to the objects, applications, and system functions as assigned by the system manager.
3. User Log On/Log Off attempts are recorded.
4. Automatic Log Off occurs following the last keystroke after a user defined delay time.
- C. Object or Object Group Scheduling:
 1. Weekly Schedules Based on Separate, Daily Schedules:
 - a. Include start, stop, optimal stop, and night economizer.
 - b. 10 events maximum per schedule.
 - c. Start/stop times adjustable for each group object.
- D. Provide standard application for equipment coordination and grouping based on function and location to be used for scheduling and other applications.
- E. Alarms:
 1. Binary object is set to alarm based on the operator specified state.
 2. Analog object to have high/low alarm limits.
 3. All alarming is capable of being automatically and manually disabled.
 4. Alarm Reporting:
 - a. Operator determines action to be taken for alarm event.
 - b. Alarms to be routed to appropriate workstation.
 - c. Reporting Options:
- F. Maintenance Management: System monitors equipment status and generates maintenance messages based upon user-designated run-time limits.
- G. Sequencing: Application software based upon specified sequences of operation in Section 230993.
- H. PID Control Characteristics:
 1. Direct or reverse action.
 2. Anti-windup.
 3. Calculated, time-varying, analog value, positions an output or stages a series of outputs.
 4. User selectable controlled variable, set-point, and PED gains.
- I. Staggered Start Application:
 1. Prevents all controlled equipment from simultaneously restarting after power outage.
 2. Order of equipment startup is user selectable.
- J. Energy Calculations:
 1. Accumulated instantaneous power or flow rates are converted to energy use data.
 2. Algorithm calculates a rolling average and allows window of time to be user specified in minute intervals.
 3. Algorithm calculates a fixed window average with a digital input signal from a utility meter defining the start of the window period that in turn synchronizes the fixed-window average with that used by the power company.
- K. Anti-Short Cycling:
 1. All binary output objects protected from short-cycling.
 2. Allows minimum on-time and off-time to be selected.
- L. On-Off Control with Differential:
 1. Algorithm allows binary output to be cycled based on a controlled variable and set-point.
 2. Algorithm to be direct-acting or reverse-acting incorporating an adjustable differential.
- M. Run-Time Totalization:
 1. Totalize run-times for all binary input objects.
 2. Provides operator with capability to assign high run-time alarm.

2.09 FIELD DEVICES

- A. All devices and equipment shall be approved for installation.

- B. Current Transducer
 - 1. Provide current transducer as required for unit status points. Input signal shall be a maximum of 0 - 1,000 amps with a corresponding output of 0 - 5 V. Sensor shall be sized to be mid scale amperage at normal conditions. Response time shall be a maximum of 250 milliseconds with an accuracy of +/- 0.5% full scale. The unit shall be split core and manufactured by Crompton, or equal.
- C. Temperature Sensors
 - 1. Provide the following instrumentation as required by the monitoring, control, and optimization functions. Temperature sensor shall be platinum RTD or thermistor type as follows
 - a. Room Temperature
 - 1) RTD-Type
 - 2) Temperature monitoring range: +40/+90 F (+40/120 F for high temp alarms)
 - 3) Output signal: 4-20 mAdc
 - 4) Installation adjustments: none required
 - 5) Calibration adjustments: zero & span
 - 6) Factory calibration point: 70 deg F
 - 7) Accuracy at calibration point: +0.5 F
 - 8) Thermistor Type (For Terminal Equipment Only)
 - 9) Temperature monitoring range: +55/+95 F
 - 10) Output signal: changing resistance
 - 11) Factory calibration point: 77 Deg. F.
 - 12) Accuracy at calibration point: +0.5 Deg F.
 - b. Duct (Single Point) Temperature
 - 1) Temperature monitoring range: +20/+120 F
 - 2) Output signal: 4-20 mAdc
 - 3) Installation adjustments: none required
 - 4) Calibration adjustments: zero & span
 - 5) Factory calibration point: 70 deg F
 - 6) Accuracy at calibration point: +0.5 F

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Contractor shall confirm quantities of all devices (e.g. actuators , sensors, relays, control transformers, etc.) as well as verify hardware functionality prior to start of work. Devices found to be dysfunctional shall be replaced in kind.
- C. All existing mechanical equipment to be tied into new BMS system shall be tested prior to start of work to evaluate existing control conditions and fully capture complete scope of work. Any missing/dysfunctional hardware shall be provided for a complete, functional installation.

3.02 INSTALLATION

- A. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.
- B. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 230993.
- C. Provide conduit and electrical wiring in accordance with Section 260583. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

3.03 MANUFACTURER'S FIELD SERVICES

- A. Start and commission systems. Allow sufficient time for start-up and commissioning prior to placing control systems in permanent operation.

- B. Provide basic operator training for ____ persons on data display, alarm and status descriptors, requesting data, execution of commands and request of logs. Include a minimum of 40 hours dedicated instructor time. Provide training on site.

3.04 COMMISSIONING, TESTING AND ACCEPTANCE

- A. Perform a three-phase commissioning procedure consisting of field I/O calibration and commissioning, system commissioning and integrated system program commissioning. Document all commissioning information on commissioning data sheets which shall be submitted prior to acceptance testing. Commissioning work which requires shutdown of system or deviation from normal function shall be performed when the operation of the system is not required. The commissioning must be coordinated with the owner and construction manager to ensure systems are available when needed. Notify the operating personnel in writing of the testing schedule so that authorized personnel from the owner and construction manager are present throughout the commissioning procedure.
1. Field I/O Calibration and Commissioning
 - a. Prior to system program commissioning, verify that each control panel has been installed according to plans, specifications and approved shop drawings. Test, calibrate and bring on line each control sensor and device. Commissioning to include, but not be limited to:
 - 1) Sensor accuracy at 10, 50, and 90% of range
 - 2) Sensor range
 - 3) Verify analog limit and binary alarm reporting
 - 4) Point value reporting
 - 5) Binary alarm and switch settings
 - 6) Actuator
 - 7) Fail safe operation on loss of control signal, electrical power, network communications, etc.
 - 8) Record calibration and test data on commissioning data sheets. Sufficient space should be provided near each point name for sign off
 - 9) Verify that the system operation adheres to the sequences of operation. Simulate and observe all modes of operation by overriding and varying input and schedules. Tune all control loops and optimum start/stop routines. Provide documented evidence of tuned control loops (e.g., graphical logs or trend reports)
 - B. System Program Commissioning
 1. After control devices have been commissioned (i.e. calibrated, tested and signed off), each program shall be put on line and commissioned. The contractor shall, in the presence of the owner and construction manager, demonstrate each programmed sequence of operation and compare the results in writing. In addition, each control loop shall be tested to verify proper response and stable control, within specified accuracy's. System program test results shall be recorded on commissioning data sheets and submitted for record. Any discrepancies between the specification and the actual performance will be immediately rectified and retested.
 - C. Integrated System Commissioning
 1. After all programs have been commissioned, the contractor shall verify the overall system performance as specified. Tests shall include, but not be limited to:
 - a. Data communication, both normal and failure modes
 - b. Fully loaded system response time
 - c. Impact of component failures on system performance and system operation
 - d. Time/Date changes
 - e. End of month / end of year operation
 - f. Season changeover. Global application programs and point sharing. System backup and reloading. System status displays. Diagnostic functions. Power failure routines. Battery backup. Smoke Control, stair pressurization, stair, etc. vents, in

concert with Fire Alarm System testing. Testing of all electrical and HVAC systems with other division of work.

- g. Global application programs and point sharing
- h. System backup and reloading
- i. System status displays
- j. Diagnostic functions
- k. Power failure routines
- l. Battery backup
- m. Smoke Control, stair pressurization, stair, etc. vents, in concert with Fire Alarm System testing
- n. Testing of all electrical and HVAC systems with other division of work.

D. Acceptance Testing

- 1. Submit for approval, a detailed acceptance test procedure designed to demonstrate compliance with contractual requirements. This Acceptance test procedure will take place after the commissioning procedure but before final acceptance, to verify that sensors and control devices maintain specified accuracy's and the system performance does not degrade over time.
- 2. Using the commissioning test data sheets, the contractor shall demonstrate a minimum of 100% of each point.
- 3. The contractor shall also demonstrate 100% of the system functions, as randomly selected by the owner.
- 4. The contractor shall supply all instruments for testing and turn over same to the owner after acceptance testing.

END OF SECTION

SECTION 230993
SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other sections.

1.02 RELATED REQUIREMENTS

- A. Section 019113 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.
- B. Section 230923 - Direct-Digital Control System for HVAC.

1.03 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Sequence of Operation Documentation: Submit written sequence of operation for entire HVAC system and each piece of equipment.
 - 1. Preface: 1 or 2 paragraph overview narrative of the system describing its purpose, components and function.
 - 2. Include initial and recommended values for all adjustable settings, setpoints and parameters that are typically set or adjusted by operating staff; and any other control settings or fixed values, delays, etc. that will be useful during testing and operating the equipment.
 - 3. For packaged controlled equipment, include manufacturer's furnished sequence of operation amplified as required to describe the relationship between the packaged controls and the control system, indicating which points are adjustable control points and which points are only monitored.
- C. Control System Diagrams: Submit graphic schematic of the control system showing each control component and each component controlled, monitored, or enabled.
 - 1. Include flow diagrams for each control system, graphically depicting control logic.
 - 2. Include the system and component layout of all equipment that the control system monitors, enables or controls, even if the equipment is primarily controlled by packaged or integral controls.
 - 3. Include draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.
 - 4. Include all monitoring, control and virtual points specified in elsewhere.
 - 5. Include a key to all abbreviations.
- D. Points List: Submit list of all control points indicating at least the following for each point.
 - 1. Name of controlled system.
 - 2. Point abbreviation.
 - 3. Point description; such as dry bulb temperature, airflow, etc.
 - 4. Control point or setpoint (Yes / No); i.e. a point that controls equipment and can have its setpoint changed.
 - 5. Monitoring point (Yes / No); i.e. a point that does not control or contribute to the control of equipment but is used for operation, maintenance, or performance verification.
 - 6. Intermediate point (Yes / No); i.e. a point whose value is used to make a calculation which then controls equipment, such as space temperatures that are averaged to a virtual point to control reset.
 - 7. Calculated point (Yes / No); i.e. a "virtual" point generated from calculations of other point values.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ROOFTOP UNIT (RTU)

- A. Building Management System (BMS) Interface
 - 1. The BMS shall send the controller Occupied Bypass, Pre-Cool, Occupied/Unoccupied and Heat//Cool modes. The BMS shall also send the discharge air temperature setpoint and the duct static pressure setpoint. If communication with the BMS is lost, the controller shall operate using default modes and setpoints.
- B. Occupied
 - 1. During occupied periods, the supply fan shall run continuously and the mixed air dampers shall open to maintain minimum ventilation requirements. The unit controller shall control the supply fan speed to maintain the current supply duct static pressure setpoint (adj.). Upon a call for DX cooling, the unit controller shall enable the first fixed speed compressor. If the fixed speed compressor cannot satisfy the load conditions, the unit controller shall start the next fixed speed compressor in sequence to add to the total unit cooling load percentage. This process shall repeat until all of the fixed speed compressors have been started or until the active discharge air temperature setpoint is satisfied.
 - 2. If economizing is enabled, the outdoor air or mixed air dampers shall modulate to maintain the discharge air temperature setpoint and the relief air damper shall track the mixed air dampers.
 - 3. If the discharge air temperature sensor fails, the DX cooling shall be disabled and an alarm shall annunciate at the BAS.
- C. Unoccupied
 - 1. When the space temperature is above the unoccupied cooling setpoint of 85.0 deg. F (adj.) the supply fan shall be commanded on, the outside air damper shall open if economizing is enabled and remain closed if economizing is disabled and the DX cooling shall be enabled. When the space temperature falls below the unoccupied cooling setpoint of 85.0 deg. F minus the Unoccupied differential of 4.0 deg. F (adj.) the supply fan shall stop, the DX cooling shall be disabled and the outside air damper shall close.
- D. Optimal Start
 - 1. The BAS shall monitor the scheduled occupied time, occupied space setpoints and space temperature to calculate when the optimal start occurs.
- E. Optimal Stop
 - 1. The BAS shall monitor the scheduled unoccupied time, occupied setpoints and space temperature to calculate when the optimal stop occurs. When the optimal stop mode is active the unit controller shall maintain the space temperature to the space temperature offset setpoint. Outside air damper shall remain enabled to provide minimum ventilation.
- F. Pre-Cool Mode
 - 1. During optimal start, if the average space temperature is above the occupied cooling setpoint, pre-cool mode shall be activated. When pre-cool is initiated the unit shall enable the fan and cooling or economizer. The outside air damper shall remain closed, unless economizing. When the space temperature reaches occupied cooling setpoint (adj.), the unit shall transition to the occupied mode.
- G. Occupied Bypass
 - 1. The BAS shall monitor the status of the ON and CANCEL buttons of the space temperature sensors. When an occupied bypass request is received from a space sensor, the unit shall transition from its current occupancy mode to occupied bypass mode and the unit shall maintain the space temperature to the occupied setpoints (adj.).
- H. Cooling Mode

1. The unit controller shall use the discharge air temperature sensor and discharge air temperature cooling setpoint to determine when to initiate requests for cooling. Discharge air setpoint shall be maintained by controlling the cooling as required.
- I. Discharge Air Temperature Reset Control
 1. The discharge air temperature setpoint shall be reset to the optimal setpoint communicated by the BAS. The BAS shall reset the discharge air temperature setpoint based on the current outside air temperature, but shall override this reset function and return the discharge air temperature setpoint to 55.0 deg. F (adj.) if more than two (adj.) zones begin to overheat. Also, the BAS shall override this reset function whenever outdoor dew point is higher than 60.0 deg. F (adj.) or indoor humidity is higher than 60% RH (adj.). If the discharge air temperature drops below the minimum limit, a low temperature alarm shall annunciate and the unit shall shut down. If the discharge air temperature rises above the maximum limit, a high temperature alarm shall annunciate.
- J. Economizer
 1. Enable (Comparative Enthalpy): Outside air (OA) enthalpy shall be compared with Return air (RA) enthalpy point. The economizer shall enable when OA enthalpy is less than RA enthalpy - 2.0 BTU/LB. The economizer shall disable when OA enthalpy is greater than RA enthalpy.
 2. Operation: The supply air sensor shall measure the dry bulb temperature of the air leaving the evaporator coil while economizing. When economizing is enabled and the unit is operating in the cooling mode, the economizer damper shall be modulated between its minimum position and 100% to maintain the discharge air temperature setpoint. The economizer damper shall modulate toward minimum position in the event the discharge air temperature falls below the discharge low limit temperature setpoint. Compressors shall be delayed from operating until the economizer has opened to 100%.
- K. Energy Recovery Wheel Operation
 1. When the outside air enthalpy is higher than the return air enthalpy, the wheel shall be turned on and both outside air and relief air bypass dampers shall be closed. When the outside air enthalpy is less than the return air enthalpy and the RTU is cooling (or airside economizing), the wheel shall be turned off and both outside air and relief air bypass dampers shall be open.
 2. When the RTU is heating, the wheel shall be turned on as the first stage of heat, the outside air bypass damper shall be closed, and the relief air bypass damper shall modulate (as necessary) to maintain discharge air temperature at setpoint (adj.). If the outside air temperature drops below the frost threshold setpoint (adj.), the outside air bypass damper shall modulate to maintain the relief-side leaving temperature at setpoint.
- L. Demand Control Ventilation (DCV)
 1. If the return air CO2 level is greater than or equal to the Design Minimum CO2 Setpoint, the outdoor air damper shall open to the Design Minimum Outdoor Air Damper Setpoint. If there is a call for economizer cooling, the damper may be opened further to satisfy the cooling request.
 2. If the return air CO2 level is less than or equal to the DCV Minimum CO2 Setpoint, the outdoor air damper shall close to the DCV Minimum Outdoor Air Damper Setpoint. If there is a call for economizer cooling, the damper may be opened further to satisfy the cooling request.
 3. If the return air CO2 level is greater than the DCV Minimum CO2 Setpoint and less than the Design Minimum CO2 setpoint, the outdoor air damper position shall be modulated proportionally to the return CO2 level relative to a target position between the DCV Minimum CO2 Setpoint and the Design Minimum CO2 Setpoint. If there is a call for economizer cooling, the damper may be opened further to satisfy the cooling request.
- M. Supply Fan
 1. The supply fan shall be enabled while in the occupied mode and cycled on during the unoccupied mode.

- N. Supply Duct Static Pressure Control
 - 1. During the occupied mode the unit controller shall modulate the output to the variable frequency drive as required to maintain the supply duct static pressure setpoint of 1.5 inches of W.C. (adj.).
 - 2. If the supply duct static pressure falls below 1.3 inches of W.C. (adj.) the unit controller shall increase the output to the variable frequency drive to maintain setpoint.
 - 3. If the supply duct static pressure rises above 1.7 inches of W.C. (adj.) the unit controller shall decrease the output to the variable frequency drive to maintain setpoint.
 - 4. Upon a call for cooling in the unoccupied mode the unit controller shall modulate the speed of the variable frequency drive to 100%.
- O. Static Pressure High Limit
 - 1. If for any reason the supply air pressure exceeds the supply air pressure high limit, the supply fan shall shut down. The unit shall be allowed to restart three times after a 15 minute off period.
 - 2. If the overpressurization condition occurs on the fourth restart, the unit shall shut down and a manual reset diagnostic is displayed at the remote panel and/or the BAS system.
 - 3. If for any reason the supply air pressure exceeds the fixed supply air pressure limit of 3.5 inches of W.C. the supply fan shall shut down. The unit shall be allowed to restart three times.
 - 4. If the over pressurization condition occurs on the fourth restart, the unit shall shut down and a manual reset diagnostic is displayed at the remote panel and/or the BAS system.
- P. Relief Air and Building Pressure Control
 - 1. A differential pressure transducer shall actively monitor the difference in pressure between the building (indoors) and outdoors. If the building pressure increases above the differential pressure setpoint, the unit controller shall open the relief air damper, turn on the relief air fan and modulate the relief air fan variable frequency drive to control building pressure to the differential pressure setpoint. If the building pressure decreases below the differential pressure setpoint, the associated controller shall deactivate the relief air fan variable frequency drive.
- Q. Filter Status
 - 1. A differential pressure switch shall monitor the differential pressure across the filter(s) when the fan is running. If the switch closes during normal operation a dirty filter alarm shall annunciate at the BAS.
- R. Condensate Overflow Shutdown
 - 1. The unit shall shut down in response to a signal from the condensate overflow sensor. The sensor shall be interlocked to the unit cooling controller for immediate shutdown of cooling.
- S. Refrigeration Mitigation Mode
 - 1. Refrigeration mitigation sequence shall be programmed by the controls vendor.
 - 2. The unit controller will monitor the leak detection system. When a leak is detected, an alarm will promptly alert the BMS via BACnet Change of Value (COV) and mitigation will be activated.
 - 3. The supply, return, and relief fans will remain operational and initiate the fans at full speed. The compressors, electric heating, electrostatic devices, and any other ignition device starters shall be disabled, and activate mechanical ventilation for the duration of the mitigation process plus an additional 5 minutes.
 - 4. The mixed air damper shall close and the outside air and relief air dampers shall open 100%.

3.02 EXHAUST FANS

- A. Exhaust fans serving the restroom shall operate on a user-defined occupancy schedule (adj.).

- B. When the exhaust fan is energized, the associated motorized damper shall open. An end switch located at the damper's actuator shall prevent the fan from starting until the isolation dampers are fully open. When the fan is de-energized, the motorized isolation dampers shall close.

3.03 AIR TERMINAL UNITS

A. Series Fan-Powered Boxes (FPB)

1. The BMS shall send the controller Occupied and Unoccupied commands. The BMS may also send a Cool/Heat mode, priority shutdown commands, and space temperature setpoint. If communication is lost with the BMS, the fan-powered box controller will operate using its local setpoints.
2. Occupancy Mode: The occupancy mode will be communicated to the controller via a binary input. Valid occupancy modes for the unit will be:
 - a. Occupied
 - 1) Normal operating mode for occupied spaces or daytime operation. When the unit is in the occupied mode, the fan-powered box will maintain the space temperature at the active occupied cooling or heating setpoint. Applicable ventilation and airflow setpoints will be enforced. The occupied mode will be the default mode of the fan-powered box.
 - b. Unoccupied
 - 1) Normal operating mode for unoccupied spaces or nighttime operation. When the unit is in unoccupied mode, the fan-powered box controller will maintain the space temperature at the unoccupied cooling or heating setpoint regardless of the presence of a communicated setpoint. When the space temperature exceeds the active unoccupied setpoint, the fan-powered box shall modulate fully closed.
 - c. Occupied Bypass
 - 1) Mode used to temporarily place the unit into the occupied operation. Occupants will be able to override the unoccupied mode from the space sensor. The override will last for a maximum of 4 hours (adj.). The occupants will be able to cancel the override from the space sensor at any time. During the override, the unit will operate in occupied mode.
3. Cool/Heat Setpoint
 - a. The space temperature setpoint will be determined either by the FPB default setpoint or a communicated value. The FPB will use the locally stored default setpoints when neither a local setpoint nor communicated setpoint is present. If both a local setpoint and communicated setpoint exist, the FPB will use the communicated value.
4. Cooling Mode
 - a. When the unit is in cooling mode, the FPB controller will maintain the space temperature at the active cooling setpoint by modulating the airflow between the active cooling minimum airflow setpoint to the maximum cooling airflow setpoint. Based on the FPB controller occupancy mode, the active cooling setpoint will be one of the following:

1)

Setpoint	Default Value
Occupied Cooling Setpoint	74.0 deg. F
Unoccupied Cooling Setpoint	85.0 deg. F

5. Heating Mode:
 - a. When the unit is in heating mode, the FPB controller will maintain the space temperature at the active heating setpoint by modulating the airflow between the active heating minimum airflow setpoint to the maximum heating airflow setpoint. Based on the FPB controller occupancy mode, the active heating setpoint will be one of the following:

Setpoint	Default Value
Occupied Heating Setpoint	71.0 deg. F

Unoccupied Heating Setpoint	60.0 deg. F

6. Intermittent Fan Control
 - a. The series fan shall run continuously via control interlock with its respective rooftop unit (RTU). During all occupied modes, as the space temperature falls below the active cooling setpoint, the FPB will modulate to its minimum cooling airflow setpoint. The fan and heat will cycle as needed to maintain a reduced space temperature.
7. Reheat Control
 - a. Reheat shall be enabled when the space temperature drops below the active heating setpoint and the minimum airflow requirements are met. During reheat, the FPB will operate at its heating airflow setpoint and energize the heat.
8. Space Sensor Failure
 - a. If there is a fault with the operation of the temperature sensor, an alarm shall be annunciated at the BMS. Space sensor failure will cause the FPB to drive the damper to minimum airflow if the FPB is in the occupied mode, or drive it closed if the FPB is in the unoccupied mode. The fan will be disabled along with the reheat.
9. Refrigerant Mitigation Mode
 - a. When a refrigerant leak is detected and an RTU enables its Refrigerant Mitigation Mode, all associated fan-powered boxes served by that RTU shall modulate its dampers fully open and fan speed to 100%.
 - b. Electric reheat, if applicable, shall be disabled and locked out during this mode.
 - c. When the leak alarm at the RTU has been cleared, the fan-powered box shall disable Refrigerant Mitigation mode and revert back to its previous operating mode.

END OF SECTION

SECTION 233600
AIR TERMINAL UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single-duct terminal units.
 - 1. Constant-volume units.
 - 2. Variable-volume units.
- B. Fan-powered units.
- C. Controls for terminal units.

1.02 RELATED REQUIREMENTS

- A. Section 230513 - Common Motor Requirements for HVAC Equipment.
- B. Section 230548 - Vibration and Seismic Controls for HVAC.
- C. Section 230993 - Sequence of Operations for HVAC Controls.
- D. Section 233100 - HVAC Ducts and Casings.
- E. Section 251400 - Integrated Automation Local Control Units: HVAC controllers.
- F. Section 251500 - Integrated Automation Software: BAS or BMS.
- G. Section 253516 - Integrated Automation Sensors and Transmitters: Sensors and switches.
- H. Section 253519 - Integrated Automation Control Valves.

1.03 REFERENCE STANDARDS

- A. AHRI 880 (I-P) - Performance Rating of Air Terminals; 2017 (Reaffirmed 2023).
- B. ASHRAE RP-1455 - Seminar 65 - Standardized Best of Class Sequences for HVAC Systems; 2016.
- C. ASTM A492 - Standard Specification for Stainless Steel Rope Wire; 1995 (Reapproved 2019).
- D. ASTM A603 - Standard Specification for Metallic-Coated Steel Structural Wire Rope; 2019.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. SMACNA (SRM) - Seismic Restraint Manual Guidelines for Mechanical Systems; 2024.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating configuration, general assembly, and materials used in fabrication. Include catalog performance ratings that indicate airflow, static pressure, and NC designation. Include electrical characteristics and connection requirements.
- C. Shop Drawings: Indicate configuration, general assembly, and materials used in fabrication, and electrical characteristics and connection requirements.
- D. Project Record Documents: Record actual locations of units and locations of access doors required for access of valving.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.06 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.

- B. Provide five year manufacturer warranty for air terminal units.

PART 2 PRODUCTS

2.01 SINGLE-DUCT, VARIABLE-VOLUME AND CONSTANT-VOLUME UNITS

- A. General:
1. Factory-assembled, AHRI 880 (I-P) rated and bearing the AHRI seal, air volume control terminal with damper assembly, flow sensor, externally mounted volume controller, duct collars, and all required features.
 2. Control box bearing identification, including but not necessarily limited to nominal cfm, maximum and minimum factory-set airflow limits, coil type and coil (right or left hand) connection, where applicable.
- B. Unit Casing:
1. Minimum 22 gauge, 0.0299 inch (0.76 mm) galvanized steel.
 2. Air Inlet Collar: Provide round, suitable for standard flexible duct sizes.
 3. Unit Discharge: Rectangular, with slip-and-drive connections.
 4. Acceptable Liners:
 - a. Liner not to contain pentabrominated diphenyl ether (CAS #32534-81-9) or octabrominated diphenyl ether.
- C. Damper Assembly:
1. Heavy-gauge, galvanized steel, or extruded aluminum construction with solid steel, nickel-plated shaft pivoting on HDPE, self-lubricating bearings.
 2. Provide integral position indicator or alternative method for indicating damper position over full range of 90 degrees.
 3. Incorporate low leak damper blades for tight airflow shutoff.
- D. Controls:
1. DDC (Direct-Digital Controls):
 - a. Bi-directional Damper Actuator: 24 volt, powered closed, spring return open.
 - b. Microprocessor-Based Controller: Air volume controller, pressure-independent with electronic airflow transducers, factory-calibrated maximum and minimum CFMs.
 - 1) Occupied and unoccupied operating mode.
 - 2) Remote reset of temperature or CFM set points.
 - 3) Proportional, plus integral control of room temperature.
 - 4) Monitoring and adjusting with portable terminal.
 - c. Room Sensor:
 - 1) Compatible with temperature controls specified.
 - 2) Wall-mounted, system powered, with temperature set-point adjustment including connection access for portable operator terminal.
 - d. See Section 25 1400.

2.02 FAN-POWERED SERIES UNITS

- A. General:
1. Factory-assembled and wired, AHRI 880 (I-P) rated, horizontal fan-powered terminal unit with blower, blower motor, mixing plenum, and primary air damper contained in a single unit housing.
- B. Unit Casing:
1. Minimum 22 gauge, 0.0299 inch (0.76 mm) galvanized steel.
 2. Primary Air Inlet Collar: Suitable for standard flexible duct sizes.
 3. Unit Discharge: Rectangular, suitable for flanged duct connection.
 4. Acceptable Liners:
- C. Primary Air Damper Assembly:
1. Heavy-gauge, galvanized steel, or extruded aluminum construction with solid shaft rotating in bearings.

2. Provide indicator on damper shaft or alternative method for indicating damper position over full range of 90 degrees.
 3. Incorporate low leak (2 percent) damper blades for tight airflow shutoff.
 4. Fan(s): Forward curved, centrifugal type.
 5. Fan Motor:
 - a. Fan motor shaft directly connected to fan and isolated from unit casing to prevent transmission of vibration.
- D. Electrical Requirements:
1. Single-point power connection.
 2. Equipment wiring to comply with requirements of NFPA 70.
- E. Controls:
1. DDC (Direct-Digital Controls):
 - a. Bi-directional Damper Actuator: 24 volt, powered closed, spring return open.
 - b. Microprocessor-Based Controller: Air volume controller, pressure-independent with electronic airflow transducers, factory-calibrated maximum and minimum CFMs.
 - 1) Occupied and unoccupied operating mode.
 - 2) Remote reset of temperature or CFM set points.
 - 3) Proportional, plus integral control of room temperature.
 - 4) Monitoring and adjusting with portable terminal.
 - c. Room Sensor:
 - 1) Compatible with temperature controls specified.
 - 2) Wall-mounted, system powered, with temperature set-point adjustment including connection access for portable operator terminal.

2.03 CONTROLS FOR TERMINAL UNITS

- A. Electric, Line Voltage:
1. Zone Thermostat:
 - a. Electromechanical SPDT switch device, direct or reverse acting, see Section 253516.
 - b. Show value and setpoint using built-in thermometer in celsius and fahrenheit units.
 2. Airflow Switch: Paddle type, momentary operation, SPDT, see Section 253516.
 3. Reheat Coil:
 - a. 2-way, 2-position ball valve, fail closed, see Section 253519.
 - b. Controlled By: Damper position closed switch interlocked with airflow switch.
- B. Direct or Distributed Digital Controller (DDC), Integrated:
1. Provide application specific controller, see Section 251400 and 251500.
 2. Accuracy: Plus/minus five percent of analog input readings and analog outputs.
 3. Sequence of Operation: Follow ASHRAE RP-1455 for specific terminal unit.
 4. Zone Thermostat:
 - a. Temperature sensor based device, see Section 253516.
 - b. Wall-mounted with occupancy sensor, setpoint adjust, and service port.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are suitable for installation.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install the inlets of air terminal units and air flow sensors a minimum of four duct diameters from elbows, transitions, and duct takeoffs.
- C. Provide ceiling access doors or locate units above easily removable ceiling components.
- D. Support units individually from structure with wire rope complying with ASTM A492 and ASTM A603 in accordance with SMACNA (SRM). See Section 23 0548.

- E. Do not support from ductwork.
- F. Connect to ductwork in accordance with Section 233100.

END OF SECTION

SECTION 237416
PACKAGED ROOFTOP AIR-CONDITIONING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Packaged, large-capacity, rooftop air-conditioning units.

1.02 RELATED REQUIREMENTS

- A. Section 077200 - Roof Accessories: Placement and installation of factory fabricated roof mounting curbs.

1.03 REFERENCE STANDARDS

- A. AHRI 340 / 360 - Performance Rating of Commercial and Industrial Unitary Air-Conditioning and Heat Pump Equipment
- B. AHRI 270 (SI/I-P) - Sound Performance Rating of Outdoor Unitary Equipment; 2025.
- C. 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.
- D. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- C. Shop Drawings: Indicate capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.
- D. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from physical damage by storing off site until roof mounting curbs are in place and ready for immediate installation of units.

1.07 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Provide a five year warranty to include coverage for refrigeration compressors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Trane Technologies, PLC; ____: www.trane.com/#sle.

2.02 PACKAGED, LARGE-CAPACITY, ROOFTOP AIR-CONDITIONING UNITS

- A. Manufacturers:
 - 1. Trane Technologies, PLC; ____: www.trane.com/#sle.
 - 2. Basis of Design: Trane SXHT15040 & SAHPF4040
- B. General

1. Units shall be specifically designed for outdoor rooftop installation on a roof curb and be completely factory assembled and tested, piped, internally wired, fully charged with compressor oil and shipped in one, two or three-pieces for field reassembly into a single unit. Single piece units shall be fully charged.
 2. Units shall be available for direct expansion cooling only, or direct expansion cooling. Filters, outside air system, relief air system, non-fused disconnect switches and all operating and safety controls shall be furnished factory installed.
 3. In select configurations, cooling capacity shall be tested in accordance with AHRI Standard 360. All units shall have decals and tags to aid in service and indicate caution areas. Electrical diagrams shall be printed on long life water resistant material and shall ship attached to control panel doors.
- 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. Unit-mounted disconnect switch with high fault SCCR (65 KAIC).

2.03 CASING

- A. Exterior panels shall be zinc coated galvanized steel, phosphatized and painted with a slate grey air-dry finish durable enough to withstand a minimum of 672 hours consecutive salt spray application in accordance with standard ASTM B117.
- B. Refrigeration components and compressor shall be accessible through removable louvered panels as standard. Unit air handling section shall be laminated double-wall construction with polyurethane foam core injected between sheet metal panels and liners. Insulation value shall be R-8. All interior surfaces shall be suitable for cleaning per ASHRAE 62. All access doors and panels shall have neoprene gaskets. Unit base shall be watertight with heavy gauge formed load bearing members and curb overhang. Unit lifting lugs shall accept chains or cables for rigging. Lifting lugs shall also serve as unit tie down points.

2.04 ACCESS DOORS

- A. Access doors shall be hinged with a single, exterior mounted, height and tension adjustable, handle to provide positive latching at three points. Access doors shall provide a door stop mechanism to latch the door in the open position to prevent unsafe door closure by wind.
- B. Doors of laminated double wall construction with a polyurethane foam core between the exterior sheet metal pane and the interior liner, with an insulating value of R8 shall be provided on the air handlers serviceable compartments such as return/relief fan, filters, evaporator coil, and blank sections. Two single wall doors shall be provided for access to the control panel.

2.05 TWO-PIECE CONSTRUCTION

- A. Two-piece construction shall facilitate lifting and rigging of the unit. The condenser section shall contain the associated valving and electrical box for recoupling of refrigeration, power and control systems. Transition panels shall be provided for the integrity on the re-coupled unit.
- B. Multi-piece units shall be dry charge shipped with nitrogen and field charged with R-454B.

2.06 AIRFLOW PATH

- A. Unit shall have downflow discharge conditioned air path. Return airflow path shall be either upflow through the end.

2.07 COMPRESSORS

- A. Compressors shall be direct-drive, hermetic, scroll-type compressors with centrifugal-type oil pumps. Each compressor has a crankcase heater to minimize the amount of liquid refrigerant present in the oil sump during off cycles. Discharge line service valves shall be standard on each refrigerant circuit, as well as liquid moisture indicator/sight glass.

2.08 SUPPLY FAN

- A. Airflow supply fan shall have a single fan assembly with double width, double inlet, airfoil fan, motor and fixed pitch sheave drive. All fans shall be statically and dynamically balanced for the

operating envelop. It shall be tested in the factory. Supply fans shall be test run in unit as part of the unit test. Fan operating envelop rpm shall be below first critical speed. Fan shafts shall be mounted on two grease lubricated ball bearings designed for 200,000 hours average life.

- B. Extended grease lines shall allow greasing of bearings from section base rail. Fan motor and fan assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. Entire assemblies shall be completely isolated from unit by two-inch deflection spring isolators.

2.09 EVAPORATOR COIL

- A. Internally enhanced copper tubing of 1/2-inch O.D. shall be mechanically bonded to heavy-duty aluminum fins of configured design. All coils shall be equipped with electronic expansion valves, and are factory pressure and leak tested. A double sloped stainless steel drain pan shall be provided to drain condensate to both sides of the unit.

2.10 STAINLESS STEEL DRAIN PAN

- A. Drain pan shall be stainless steel, double sloped, and located under the evaporator coil in order to promote runoff of standing water from condensation inside the unit as well as provide protection in corrosive environments. Two drain pipes shall be installed through the base channel on each side of the unit.

2.11 FILTER DRIER

- A. Removable core filter driers shall be optionally available and installed on each refrigeration circuit. For easy access, the filter driers are conveniently located in the condenser section close to the periphery of the unit.

2.12 SUCTION SERVICE VALVES

- A. Each compressor shall be optionally equipped with a suction service valve in order to facilitate compressor servicing.

2.13 LEAK DETECTION SENSORS

- A. Unit shall be furnished with a leak detection system from the factory. The leak detection system shall consist of one or more refrigerant detection sensors. When the system detects a leak, the unit controller shall initiate mitigation actions.

2.14 AIR-COOLED CONDENSER COIL

- A. Condenser coils shall have all-aluminum, Microchannel coils. All coils shall be leak tested at the factory to ensure pressure integrity. The condenser coil shall be pressure tested to 650 psig. Subcooling circuit (s) shall be provided as standard.

2.15 AIR-COOLED CONDENSER FANS AND MOTORS

- A. All condenser fans shall be vertical discharge, direct drive fans, statically balanced, with steel blades and zinc-plated steel hubs. Condenser fan motors shall be totally enclosed three-phase motors with permanently lubricated ball bearings, built-in current and thermal overload protection and weather tight slingers over motor bearings.

2.16 ELECTRICAL

- A. Unit shall be completely factory wired with necessary control and contactor pressure lugs or terminal block for power wiring. Units shall provide an internal location for a non-fused disconnect with external handle for safety.

2.17 UNIT CONTROLLER

- A. The programmable controller is factory-installed and designed to control packaged HVAC equipment. A 7-inch user interface features a touch-sensitive color screen that provides facility managers with at-a-glance operating status, performance monitoring, scheduling changes, and operating adjustments. Other advanced features include automated controller backup and optional features such as secure remote connectivity, wireless building communications, mobile device connectivity, and custom programming with expandable I/O.

2.18 BACNET COMMUNICATION

- A. Rooftop controller communication interface shall utilize the BACnet protocol with an RS485 (EIA-485) physical interface and an appropriate data link technology as defined in ANSI®/ASHRAE® Standard 135-2012. (e.g. BACnet/MSTP). The rooftop controller shall be BTL listed as a BACnet Advanced Application Controller (B-AAC) as defined in ANSI/ASHRAE Standard 135-2012.

2.19 POWER MONITOR

- A. Factory-installed power meter shall measure unit energy usage to 0.2 percent accuracy (ANSI C12.20) and communicate through the unit controller enabling viewing through user interface or building automation system.

2.20 CONTROLS EXPANSION HARDWARE

- A. The rooftop controller shall have field applied controls capability. Factory-installed expansion hardware shall have nineteen (19) inputs/outputs. Additional expansions may be added in the field.

2.21 VARIABLE AIR VOLUME SUPPLY AIR TEMPERATURE CONTROL

- A. Option provides all the necessary controls to operate a VAV rooftop from the discharge air temperature, including discharge air microprocessor controller and discharge air sensor. The microprocessor controller coordinates the economizer control and the stages of cooling with zone or outdoor air reset capabilities and an adjustable control band to fine-tune the control to specific applications.

2.22 VARIABLE FREQUENCY DRIVE (VFD) BYPASS

- A. Supply fan bypass control provides airflow at 60 Hz in the event of drive failure.

2.23 POWER SUPPLY

- A. Air-cooled rooftop unit shall be available with 460 Voltage, 3 phase, 60 Hz power supply.

2.24 CONVENIENCE OUTLET

- A. A 15A, 115V Ground Fault Interrupter convenience outlet shall be factory installed and wired and powered from a factory mounted transformer. A unit mounted, non-fused disconnect with internal handle is furnished with the factory powered convenience outlet.

2.25 NON-FUSED DISCONNECT SWITCH

- A. An external handle mounted on the control box door shall be provided to disconnect unit power with the control box door closed for safety.

2.26 COMPRESSOR PROTECTION

- A. Compressor Protection Modules shall be included in the junction box to protect compressors against reverse rotation.
- B. A 65,000 Amp rating (480V) shall be applied to the unit enclosure using a non-fused circuit breaker for disconnect switch purposes. The unit shall be marked with approved cULus markings and will adhere to cULus regulations.

2.27 MARINE LIGHTS (RTU-1 & RTU-2)

- A. A customer-provided 120V service will supply power to a fused disconnect switch which feeds a transformer providing class 2, 24V power to the LED Marine Lights. The LED Marine Lights shall be placed in the Supply Section (2), Outside Air Section (1), Return Section (1), and Extended Casing Section (1) for units without heat.

2.28 SUPPLY / RELIEF / RETURN MOTORS

- A. Supply, relief/return motors shall be either open drip-proof or totally enclosed fan cooled (TEFC). All 60 Hz motors meet the Energy Independence and Security Act of 2007 (EISA). All 50 Hz supply, relief/ return motors shall meet the U.S. Energy Policy Act of 1992 (EPACT).

Motors with internal Shaft grounding rings can be selected for use with VFD applications and shall provide a conductive discharge path away from the motor bearings to ground.

2.29 FILTERS

- A. Filter options shall mount integral within the unit and be accessible by a hinged access door with a single point latching device.

2.30 PRE-EVAPORATOR COIL FILTER OPTIONS

- A. MERV 14, 90-95 Percent, Low Pressure Drop, Totally Incinerable, Cartridge
 - 1. Twelve-inch deep cartridge filter shall be U.L. Class 2 and mounted with a rigid 7/8-inch nominal thickness header frame. These cartridge filters shall have an efficiency rating of MERV 14 per ASHRAE 52.2. To ensure maximum cartridge final filter life four-inch, MERV 8 prefilters shall be included with these cartridge filters. Filters shall be mounted in a galvanized steel filter frame bank.

2.31 RELIEF AIR (RTU-1 & RTU-2)

- A. Relief air opening is sealed with panel and made watertight.
- B. 100% Modulating Relief Fan with Statitrac Control Option
 - 1. Fan design is double width, double inlet forward-curved type. Fan is mounted on a shaft with fixed sheave drive. All fans are dynamically balanced and tested in factory before being installed in unit. Relief fan is test run as part of unit final run test.
 - 2. Fan operating envelope rpm is be below first critical speed. Fan shaft is be mounted on two grease lubricated ball or roller bearings designed for 200,000-hour average life. Extended grease lines are provided to allow greasing of bearings from section base rail.
 - 3. Fan motor and assembly is mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. The entire assembly is completely isolated from unit with 2-inch spring isolators. For VAV rooftops, the 100 percent modulating relief discharge damper (or VFD) is modulated in response to building pressure. A differential pressure control system, (Statitrac), uses a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure. The FC relief fan is turned on when required to lower building static pressure setpoint.
 - 4. The (Statitrac) control system then modulates the discharge dampers (or VFD) to control the building pressure to within the adjustable, specified deadband that shall be adjustable at the user interface.

2.32 RETURN AIR (RTU-3 & RTU-4)

- A. Return air options shall include 100% modulating return fan and 100% modulating return with direct space building pressurization control. Return fans shall be either standard or low airflow.
- B. 100% Modulating Return Fan with Statitrac Control Option
 - 1. A single width plenum fan with airfoil blade shall be mounted on a shaft with fixed sheave drive. The fan shall be dynamically balanced for the operating envelop and tested in factory before being installed in unit. The plenum fan shall be test run as part of unit final run test. Fan operating envelop rpm shall be below first critical speed. Fan shaft shall be mounted on two grease lubricated ball or roller bearings designed for 200,000-hour average life. Extended grease lines shall be provided to allow greasing of bearings from section base rail.
 - 2. Fan motor and assembly shall be mounted on common base to allow consistent belt tension with no relative motion between fan and motor shafts. The entire assembly shall be completely isolated from unit with 2-inch spring isolators. The 100% modulating relief damper shall be modulated in response to building pressure. A differential pressure control system shall use a differential pressure transducer to compare indoor building pressure to outdoor ambient atmospheric pressure.
 - 3. The Statitrac control system shall modulate the discharge dampers to control the building pressure to within the adjustable, specified deadband that shall be adjustable at the user interface. The return fan VFD shall modulate in response to return duct static pressure.

Optional bypass can be factory installed to provide full nominal airflow in the event of a drive failure.

2.33 OUTSIDE AIR

- A. 0-100 Percent Modulating Economizer Option
 - 1. Economizer is operated through the primary temperature controls to automatically utilize OA for "free" cooling. Automatically modulated return and OA dampers maintains proper temperature in the conditioned space. Economizer is equipped with an automatic lockout when the outdoor high ambient temperature is too high for proper cooling. Minimum position control is standard and adjustable at the user interface or with a remote potentiometer or through the building management system. A spring return motor ensures closure of OA dampers during unit shutdown or power interruption. Mechanical cooling is available to aid the economizer mode at any ambient. Standard economizer dampers have a leakage rate of 20 CFM/ft² at 1.0 in W.C. pressure difference.
- B. Low Leak Dampers
 - 1. Low leak dampers are provided with chlorinated polyvinyl chloride gasketing added to the damper blades and rolled stainless steel jamb seals to the sides of the damper assembly. The low leak dampers have a leakage rate of 10 CFM/ft² (AMCA Class 2) at 1.0 in W.C. pressure difference.
 - 2. Economizer frame and 6-inch wide blades are galvanized steel. Blade edge seals are Ruskiprene (-72° F to +275°F) and jamb seals are be compressible, flexible metal.
 - 3. The economizer fresh air damper includes an adjustable linkage to allow for field damper balance of pressure drop between 100% fresh and 100% return airflow paths. The adjustable linkage is used to limit the fresh air damper maximum wide open stroke.

2.34 FAULT DETECTION AND DIAGNOSTIC

- A. Fault Detection and Diagnostic (FDD) control are also be provided with Ultra Low Leak Economizers. FDD control monitors the commanded position of the economizer compared to the feedback position of the damper. If the damper position is outside +/- 10 percent of the commanded position, a diagnostic is generated.
- B. Economizer Control with Comparative Enthalpy
 - 1. Option includes two enthalpy sensors to compare total heat content of the indoor air and outdoor air to determine the most efficient air source when economizing.

2.35 OUTSIDE AIR MEASUREMENT

- A. A factory-mounted airflow measurement station is provided in the outside air opening to measure airflow. The airflow measurement station is AMCA-certified (+/- 5.0%) from 300 fpm to 2500 fpm. The airflow measurement station adjusts for temperature variations.

2.36 DEMAND CONTROL VENTILATION

- A. When equipped with a CO₂ sensor and the (VCM) module, the outside air damper position modulates in response to a CO₂ sensor in the conditioned space, in order to minimize the unit energy consumption, yet simultaneously meet the ventilation requirements of ASHRAE Std 62.1. The airflow monitoring solution augments the system, allowing for measurement and control of outside airflow.

2.37 ENERGY RECOVERY WHEEL

- A. The energy recovery option shall incorporate a rotary wheel in an insulated cassette frame complete with seals, drive motor, and drive belt. Two wheel size options shall be available for each unit. The standard size option shall be capable of treating 50% of maximum unit outside airflow, while the low CFM shall be able to treat only 30%. A relief fan shall be required in conjunction with the energy recovery option. A return fan option is incompatible with the energy recovery wheel option.
- B. A total energy recovery wheel shall be required to recover both sensible and latent energy. The factory installed wheel shall be coated with a silica gel desiccant. The desiccant shall be

permanently bonded without the use of binders or adhesives or other means which may degrade desiccant performance. The substrate shall be lightweight polymer and shall not degrade nor require additional coatings for application in marine or coastal environments.

- C. Desiccant shall not dissolve or deliquesce in the presence of water or high humidity. The coated wheel segments shall be washable with non-acid coil cleaner or alkaline detergent and warm water. Wheel segments shall be removable without specialized tools or compartment modifications to facilitate maintenance and cleaning.

2.38 SPACE PRESSURIZATION

- A. The rooftop unit manufacturer shall provide eight (8) days of on-site programming by a factory-trained service representative for building pressurization controls for all rooftop units.
- B. Space pressure setpoint shall be based on the average space pressure reading on each floor.

2.39 ACCESSORIES

- A. Roof Mounting Curb
 - 1. Pre-fabricated vibration isolation curb to be manufactured of prime G-90 galvanized steel construction, 14 gauge, meeting ASTM A653/653M, with welded corners and with seams joined by continuous water and air tight welds.
 - 2. Curb shall have 1-1/2" thick, 3 lbs. rigid insulation.
 - 3. Vibration isolation curb shall be internally reinforced with bulkheads 48" on center and factory-installed wood nailer. Top of vibration isolator curb shall be level, with pitch built into curb when deck slopes.
 - 4. Vibration isolation curb shall be designed to provide a minimum of 90% isolation efficiency with 2" deflection. 9" continuous rubber cover around perimeter of vibration isolation curb over spring isolators.
 - 5. Curb shall ship as one piece, along with pedestal rail.
 - 6. Curbs shall accommodate existing roof penetration locations for supply and return ductwork on roof. Contractor shall field-measure existing penetration locations and ductwork dimensions prior to fabrication.
 - 7. RTU-1 & RTU-2 shall have return plenum curb extension to accommodate existing return duct penetration. Curb extension dimensions shall be verified in field by contractor. Curb extension shall be crowned so water shall not puddle on top.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that roof is ready to receive work and opening dimensions are as required by manufacturer.
- B. Verify that proper power supply is available.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.03 SYSTEM STARTUP

- A. Prepare and start equipment. Adjust for proper operation.

3.04 CLOSEOUT ACTIVITIES

3.05 MAINTENANCE

- A. Provide service and maintenance of packaged rooftop units for one year from Date of Substantial Completion.
- B. Provide routine maintenance service with a two-month interval as maximum time period between calls.
- C. Include maintenance items as outlined in manufacturer's operating and maintenance data, including minimum of six filter replacements, minimum of one fan belt replacement, and controls check-out, adjustments, and recalibration.

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- D. After each service call, submit copy of service call work order or report that includes description of work performed.

END OF SECTION

SECTION 260519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Wire pulling lubricant.
- E. Cable ties.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- C. Section 260553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2018).
- 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; 2017.
- F. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- G. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.
- H. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- K. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- L. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- M. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- N. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

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 conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- C. Manufactured Wiring System Shop Drawings: Provide plan views indicating proposed system layout with components identified; indicate branch circuit connections.

- D. Field Quality Control Test Reports.
- E. 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.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- 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.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- 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. 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.
- J. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
- K. 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.
 - 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.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
 - 1. Copper Building Wire:
 - a. Cerro Wire LLC: www.cerrowire.com/#sle.
 - b. Encore Wire Corporation: www.encorewire.com/#sle.
 - c. Southwire Company: www.southwire.com/#sle.
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Stranded.
 - 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.

2.04 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 : Use compression connectors.
- D. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs. All terminal lugs shall be two hole long barrel compression lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Copper Conductorscompression type.: Use compression connectors where connectors are required.
- E. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - 1. Manufacturers:
 - a. Burndy: www.burndy.com.
 - b. IlSCO: www.ilsco.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.

2.05 WIRING ACCESSORIES

- A. Electrical Tape:
 - 1. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).

- B. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
- C. Cable Ties: Material and tensile strength rating suitable for application.

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. Include circuit lengths required to install connected devices within 10 ft (3.0 m) of location shown.
 - 4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 - 5. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
 - 6. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is not permitted.
 - 7. 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.
- B. Install products in accordance with manufacturer's instructions.
- C. Perform work in accordance with NECA 1 (general workmanship).
- D. 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.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. 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.
- G. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.

- H. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- I. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- J. 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. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- K. 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.
- L. Insulate ends of spare conductors using vinyl insulating electrical tape.
- M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- N. 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. See Section 014000 - Quality Requirements, for additional requirements.
- B. Perform inspection, testing, and adjusting in accordance with Section 014000.
- C. Inspect and test in accordance with NETA ATS, except Section 4.
- D. Perform inspections and tests listed in NETA 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.
- E. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 260526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground bars.

1.02 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.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NETA ATS - Standard For Acceptance Testing Specifications For Electrical Power Equipment And Systems; 2021.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.04 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.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- D. Installer Qualifications for Signal Reference Grids: Company with minimum five years documented experience with high frequency grounding systems.

1.06 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. 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.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 - 1. Provide products listed, classified, and labeled as suitable for the purpose intended.
 - 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 260526:
 - 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 compression connectors for accessible connections.
 - a. Exceptions:
 - 1) Use exothermic welded connections for connections to metal building frame.
 - 3. Manufacturers - Mechanical and Compression Connectors:
 - a. Burndy: www.burndy.com.
 - b. Harger Lightning & Grounding: www.harger.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 - 4. Manufacturers - Exothermic Welded Connections:
 - a. Burndy: www.burndy.com.
 - b. Cadweld, a brand of Erico International Corporation: www.erico.com/#sle.
 - c. ThermOweld, a brand of Continental Industries, Inc: www.thermoweld.com/#sle.
- 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/#sle.
 - b. Harger Lightning & Grounding: www.harger.com/#sle.
 - c. ThermOweld, a brand of Continental Industries, Inc: www.thermoweld.com/#sle.

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. Perform work in accordance with NECA 1 (general workmanship).
- C. 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. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- D. Identify grounding and bonding system components in accordance with Section 260553.

3.03 FIELD QUALITY CONTROL

- A. See Section 014000 - Quality Requirements, for additional requirements.
- B. Perform inspection, testing, and adjusting in accordance with Section 014000.
- C. Inspect and test in accordance with NETA STD ATS except Section 4.
- D. Perform inspections and tests listed in NETA ATS, Section 7.13.
- E. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- F. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

**SECTION 260529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

- A. Section 260533.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.
- B. Section 260533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

1.03 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. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 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 Engineer/Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 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. Evaluation Reports: For products specified as requiring evaluation and recognition by ICC Evaluation Service, LLC (ICC-ES), provide current ICC-ES evaluation reports upon request.
- E. Installer's Qualifications: Include evidence of compliance with specified requirements.
- F. 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.

1.06 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.

1.07 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 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 products for applications other than as permitted by NFPA 70 and product listing.
 - 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. 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.
- C. 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.
- D. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
- E. Anchors and Fasteners:
 - 1. 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 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. Perform work in accordance with NECA 1 (general workmanship).
- C. Unless specifically indicated or approved by Engineer/Architect, do not provide support from suspended ceiling support system or ceiling grid.

- D. Unless specifically indicated or approved by Engineer/Architect, do not provide support from roof deck.
- E. 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.
- F. Secure fasteners according to manufacturer's recommended torque settings.
- G. 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

SECTION 260533.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Electrical metallic tubing (EMT).
- C. Conduit fittings.

1.02 RELATED REQUIREMENTS

- A. Section 078400 - Firestopping.
- B. Section 260519 - Low-Voltage Electrical Power Conductors and Cables: Metal clad cable (Type MC), armored cable (Type AC), and manufactured wiring systems, including uses permitted.
- C. Section 260526 - Grounding and Bonding for Electrical Systems.
- D. Section 260529 - Hangers and Supports for Electrical Systems.
- E. Section 260533.16 - Boxes for Electrical Systems.

1.03 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. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- H. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- I. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 2. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 - 3. Notify Engineer/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.

1.05 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. Indicate proposed arrangement for conduits to be installed within structural concrete slabs, where permitted.
 2. Include proposed locations of roof penetrations and proposed methods for sealing.
- D. Project Record Documents: Record actual routing for conduits embedded within concrete slabs and conduits 2 inch (53 mm) trade size and larger.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

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.

2.02 CONDUIT REQUIREMENTS

- A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. 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/#sle.
 2. Republic Conduit: www.republic-conduit.com/#sle.
 3. Wheatland Tube Company: www.wheatland.com/#sle.
- 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/#sle.
 - b. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
 - c. Thomas & Betts Corporation: www.tnb.com/#sle.
 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.
 4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- B. Fittings:

1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
2. Material: Use steel or malleable iron.
3. Connectors and Couplings: Use compression (gland) type.
 - a. Do not use indenter type connectors and couplings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive conduits.
- 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 accordance with NECA 1 (general workmanship).
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. 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.
- E. 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. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 5. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 6. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- F. 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.

- G. 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.
- H. 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.
- I. 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.

3.04 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 260533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches (1,650 cu cm).
- C. Floor boxes.

1.02 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 260533.13 - Conduit for Electrical Systems:
 - 1. Conduit bodies and other fittings.
 - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- F. Section 260553 - Identification for Electrical Systems: Identification products and requirements.
- G. Section 262726 - Wiring Devices:
 - 1. Floor box service fittings.
 - 2. Additional requirements for locating boxes for wiring devices.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 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.

1.04 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.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements, for submittal procedures.
- B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 016000 - Product Requirements, for additional provisions.
 2. Keys for Lockable Enclosures: Two of each different key.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 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 as suitable for the purpose intended.
 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 (1,650 cu cm), 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 suitable concrete type boxes where flush-mounted in concrete.
 4. Use suitable masonry type boxes where flush-mounted in masonry walls.
 5. Use raised covers suitable for the type of wall construction and device configuration where required.
 6. Use shallow boxes where required by the type of wall construction.
 7. Do not use "through-wall" boxes designed for access from both sides of wall.
 8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.

9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
 10. 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.
 11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes.
 12. Manufacturers:
 - a. Cooper Crouse-Hinds, a division of Eaton Corporation; _____: www.cooperindustries.com/#sle.
 - b. Hubbell Incorporated; Bell Products; _____: www.hubbell-rtb.com/#sle.
 - c. Hubbell Incorporated; RACO Products; _____: www.hubbell-rtb.com/#sle.
 - d. O-Z/Gedney, a brand of Emerson Industrial Automation: www.emersonindustrial.com/#sle.
 - e. Thomas & Betts Corporation: www.tnb.com/#sle.
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches (1,650 cu cm):
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. NEMA 250 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 (1,650 cu cm):
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
 - b. Boxes 6 square feet (0.56 sq m) and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.
 4. Cabinets and Hinged-Cover Enclosures, Other Than Junction and Pull Boxes:
 - a. Provide lockable hinged covers, all locks keyed alike unless otherwise indicated.
 - b. Back Panels: Painted steel, removable.
 - c. Terminal Blocks: Provide voltage/current ratings and terminal quantity suitable for purpose indicated, with 25 percent spare terminal capacity.
 5. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
 6. Manufacturers:
 - a. Cooper B-Line, a division of Eaton Corporation; _____: www.cooperindustries.com/#sle.
 - b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
 - c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com/#sle.
- D. Floor Boxes:
1. Description: Floor boxes compatible with floor box service fittings provided in accordance with Section 262726; with partitions to separate multiple services; furnished with all components, adapters, and trims required for complete installation.
 2. Manufacturer: Same as manufacturer of floor box service fittings.

PART 3 EXECUTION

3.01 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. Install boxes in accordance with NECA 1 (general workmanship) 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.
 - 2. Unless dimensioned, box locations indicated are approximate.
 - 3. Locate boxes as required for devices installed under other sections or by others.
 - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 262726.
 - 4. Locate boxes so that wall plates do not span different building finishes.
 - 5. Locate boxes so that wall plates do not cross masonry joints.
 - 6. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 - 7. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches (150 mm) horizontal separation unless otherwise indicated.
- 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.
- J. Install boxes plumb and level.
- K. Flush-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 (6 mm) 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 (3 mm) at the edge of the box.
- L. Install boxes as required to preserve insulation integrity.
- M. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 078400.
- O. Close unused box openings.
- P. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- Q. Provide grounding and bonding in accordance with Section 260526.
- R. Identify boxes in accordance with Section 260553.

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

SECTION 260553
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Voltage markers.
- E. Warning signs and labels.

1.02 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 - Lutron: Device and wallplate finishes; factory pre-marked wallplates.

1.03 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; 2015.
- E. UL 969 - Marking and Labeling Systems; Current Edition, Including All Revisions.

1.04 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.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittals procedures.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 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 ampere rating.
 - 2) Identify voltage and phase.

- 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Use identification nameplate to identify main overcurrent protective device.
 - 5) Use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
 - b. Panelboards:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
 - 5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
 - 6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
 - c. Transformers:
 - 1) Identify kVA rating.
 - 2) Identify voltage and phase for primary and secondary.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Identify load(s) served. Include location when not within sight of equipment.
 - d. Busway:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Provide identification at maximum intervals of 40 feet (12 m).
 - 5) Use identification nameplate to identify load(s) served for each plug-in unit. Include location when not within sight of equipment.
 2. Use voltage marker to identify highest voltage present for each piece of electrical equipment.
 3. Use identification nameplate to identify equipment utilizing series ratings, where permitted, in accordance with NFPA 70.
 4. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
 5. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
 6. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
 - a. Service equipment.
 - b. Industrial control panels.
 - c. Motor control centers.
 - d. Elevator control panels.
 - e. Industrial machinery.
- B. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 260519.
 2. 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.

3. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. At each source and load connection.
 - b. Within boxes when more than one circuit is present.
 - c. Within equipment enclosures when conductors and cables enter or leave the enclosure.
4. Use wire and cable markers to identify connected grounding electrode system components for grounding electrode conductors.
- C. Identification for Raceways:
 1. Use voltage markers to identify highest voltage present for accessible conduits at maximum intervals of 20 feet (6.1 m).
- D. Identification for Boxes:
 1. Use voltage markers to identify highest voltage present.
 2. Use voltage markers or color coded boxes to identify systems other than normal power system.
- E. Identification for Devices:
 1. Wiring Device and Wallplate Finishes: Comply with Section 262726.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 1. Manufacturers:
 - a. Brimar Industries, Inc: www.brimar.com/#sle.
 - b. Kolbi Pipe Marker Co; _____: www.kolbipipemarkers.com/#sle.
 - c. Seton Identification Products; _____: www.seton.com/#sle.
 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 (1.6 mm); engraved text.
 4. Stainless Steel Nameplates: Minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
 5. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch (0.8 mm); engraved or laser-etched text.
 6. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch (25 mm) high; Four, located at corners for larger sizes.
- B. Identification Labels:
 1. Manufacturers:
 - a. Brady Corporation; _____: www.bradyid.com/#sle.
 - b. Brother International Corporation: www.brother-usa.com/#sle.
 - c. Panduit Corp: www.panduit.com/#sle.
 2. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 3. 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 (25 mm) by 2.5 inches (64 mm).
 2. Legend:
 - a. Equipment designation or other approved description.
 3. Text: All capitalized unless otherwise indicated.
 4. Minimum Text Height:

- a. Equipment Designation: 1/2 inch (13 mm).
- 5. Color:
 - a. Normal Power System: White text on black background.
 - b. Emergency Power System: White text on red background.
- D. Format for General Information and Operating Instructions:
 - 1. Minimum Size: 1 inch (25 mm) by 2.5 inches (64 mm).
 - 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 (6 mm).
 - 5. Color: Black text on white background unless otherwise indicated.
- E. Format for Receptacle Identification:
 - 1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
 - 2. Legend: Power source and circuit number or other designation indicated.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 3/16 inch (5 mm).
 - 5. Color: Black text on clear background.
- F. Format for Control Device Identification:
 - 1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
 - 2. Legend: Load controlled or other designation indicated.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 3/16 inch (5 mm).
 - 5. Color: Black text on clear background.
- G. Format for Fire Alarm Device Identification:
 - 1. Minimum Size: 3/8 inch (10 mm) by 1.5 inches (38 mm).
 - 2. Legend: Designation indicated and device zone or address.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 3/16 inch (5 mm).
 - 5. Color: Red text on white background.

2.03 WIRE AND CABLE MARKERS

- A. Manufacturers:
 - 1. Brady Corporation; _____: www.bradyid.com/#sle.
 - 2. HellermannTyton; _____: www.hellermannntyton.com/#sle.
 - 3. Panduit Corp: www.panduit.com/#sle.
- B. 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.
- C. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- D. Legend: Power source and circuit number or other designation indicated.
- E. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
- F. Minimum Text Height: 1/8 inch (3 mm).
- G. Color: Black text on white background unless otherwise indicated.

2.04 VOLTAGE MARKERS

- A. Manufacturers:
 - 1. Brady Corporation; _____: www.bradyid.com/#sle.
 - 2. Brimar Industries, Inc: www.brimar.com/#sle.
 - 3. Seton Identification Products; _____: www.seton.com/#sle.

- B. Markers for Conduits: Use factory pre-printed self-adhesive vinyl, self-adhesive vinyl cloth, or vinyl snap-around type markers.
- C. Markers for Boxes and Equipment Enclosures: Use factory pre-printed self-adhesive vinyl or self-adhesive vinyl cloth type markers.
- D. Minimum Size:
 - 1. Markers for Equipment: 1 1/8 by 4 1/2 inches (29 by 110 mm).
 - 2. Markers for Conduits: As recommended by manufacturer for conduit size to be identified.
 - 3. Markers for Pull Boxes: 1 1/8 by 4 1/2 inches (29 by 110 mm).
 - 4. Markers for Junction Boxes: 1/2 by 2 1/4 inches (13 by 57 mm).
- E. Legend:
 - 1. Markers for Voltage Identification: Highest voltage present.
 - 2. Markers for System Identification:
- F. Color: Black text on orange background unless otherwise indicated.

2.05 WARNING SIGNS AND LABELS

- A. Manufacturers:
 - 1. Brimar Industries, Inc: www.brimar.com/#sle.
 - 2. Clarion Safety Systems, LLC; _____: www.clarionsafety.com/#sle.
 - 3. Seton Identification Products; _____: www.seton.com/#sle.
- B. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- C. Warning Signs:
 - 1. Materials:
 - 2. Minimum Size: 7 by 10 inches (178 by 254 mm) 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.
 - 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 - 3. Minimum Size: 2 by 4 inches (51 mm by 102 mm) 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. Conduits: Legible from the floor.
 - 8. Boxes: Outside face of cover.
 - 9. Conductors and Cables: Legible from the point of access.
 - 10. 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. 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