

Specifications for:
New Restroom Facilities
located at
Fasola Park
for
Deptford Township, New Jersey

1011 Cooper Street
Deptford, New Jersey 08096



Joseph F. McKernan Jr., Architects & Associates
100 Dobbs Lane, Suite 204
Cherry Hill, New Jersey 08034
(856) 616-2960 / (856) 616-2963 fax

Project No. 1181

Rebid December 2022

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SPECIFICATION DATA SHEET

Project:

Name: New Restroom Facilities at Fasola Park
Location: Fasola Park, 12 Sycamore Lane, Deptford Township, NJ
Project Nos.: 1181

Owner:

Name: Deptford Township
Address: 1011 Cooper Street, Deptford, NJ 08096
Representative: Rob Ritterson, Superintendent of Public Works
Phone: (856) 228-4719 Fax (856) 228-3654
Email: rritterson@deptford-nj.org

Architect:

Name: Joseph F. McKernan Jr., Architects & Assoc.
Address: 100 Dobbs Lane, Suite 204, Cherry Hill, NJ 08034
Representative: Douglas Fuller, Project Architect
Phone: (856) 616-2960 Fax: (856)-616-2963
Email: doug@mckernanarchitects.com

MEP Engineer:

Name: Holstein White Inc.
Address: 210 E. Street Road, Feasterville, PA 19053
Representative: Dustin Balton, Project Engineer
Phone: (215) 322-7711 Fax: (215)-322-7709
Email: dbalton@holsteinwhite.com

Site Engineer

Name: Bryson Yates, Consulting Engineers, LLC
Address: 307 Greentree Road, Sewell, New Jersey 08080
Representative: Edward Farrell, PE
Phone: (856) 589-1400 Fax: (856) 582-7976
Email: efarrell@brysonyates.com

Bidding & Contract Documents:

Contract Documents Dated: December 2022
Due Date: January 11, 2023 at 10:15 AM
Location of Bid Opening: Deptford Township Municipal Building
1011 Cooper Street
Deptford, NJ 08096

**SPECIFICATIONS FOR NEW RESTROOMS
FASOLA PARK
DEPTFORD TOWNSHIP**



Township of Deptford

**Contact:
Dina L, Zawadski, Township Clerk
1011 Cooper Street
Deptford, NJ 08096**

PUBLIC NOTICE

DEPTFORD TOWNSHIP NOTICE TO BIDDERS

Sealed bids will be received by the Township Clerk of the Township of Deptford at **10:15 AM** prevailing time on January 11, 2023 in the Deptford Township Municipal Building, 1011 Cooper Street, Deptford, Gloucester County, New Jersey 08096, after which time they will be publicly read aloud for:

CONSTRUCTION OF NEW RESTROOM FACILITIES AT FASOLA PARK INCLUDING REQUIRED SITE WORK AND UTILITIES

Specifications and proposal sheets may be obtained at the office of the Township Clerk in the Municipal Building, 1011 Cooper Street, Deptford, Gloucester County, New Jersey, 08096. Specifications can be obtained in either electronic or paper copies. Fee for paper copy \$50.00, electronic no fee.

Bids must be on proposal sheets furnished by the Township Clerk's Office enclosed in sealed envelope and addressed to the Office of the Township Clerk, Township of Deptford and plainly marked on the outside with the name of the bidder and New Restroom Facilities. One (1) paper copy must be submitted with all required documentation signed, completed and notarized as required.

Bids must be accompanied by a certified check, cashier's check or bid bond for 10% of the total bid – to a maximum of \$20,000.00.

During the performance of this contract, all contracts are required to comply with the requirements of P.L. 1975, Ch. 127 (NJAC 17:27) (Affirmative Action requirements) as well as P.L. 1977, Chapter 33, (Public Disclosure Statement) and Americans with Disabilities Act.

The Township of Deptford reserves the right to reject any and all bids in accordance with the Local Public Contracts Law.

Township of Deptford
Dina L. Zawadski, Township Clerk

1. INSTRUCTION TO BIDDERS

1.1 THE BID

The TOWNSHIP OF DEPTFORD is soliciting bid proposals for the construction of new restrooms at Fasola Park along with all related site improvements and grading, (Note the water and sewer mains to the building will be installed by the DTMUA, see the utility plans.

Specifications and proposal sheets may be obtained at the office of the Township Qualified Purchasing Agent for a fee of \$50.00, in the Municipal Building, 1011 Cooper Street, Deptford, Gloucester County, New Jersey 08096.

1.2 CHANGES TO THE BID SPECIFICATIONS

Notice of revisions of addenda to advertisements or bid documents relating to bids will, no later than five days, Saturdays, Sundays and holidays excepted, prior to the date for acceptance of bid's, be published in the Courier Post, and in the South Jersey Times.

1.3 BID OPENING

All bid proposals will be publicly opened and read by Township Officials of the Township of Deptford on January 11, 2023 **at 10:15 AM** at the Township Municipal Building, 1011 Cooper Street, Deptford, New Jersey, 08096.

Bids must be delivered by hand or by registered mail to Township Clerk, Dina Zawadski, no later than January 11, 2023 **at 10:15 AM**. All bid proposals will be date and time stamped upon receipt. Bidder is solely responsible for the timely delivery of the bid proposal and no bids shall be considered which are presented after the public call for receiving bids. Any Bid proposal received after the date and time specified will be returned, unopened, to the bidder.

1.4 DOCUMENTS TO BE SUBMITTED

The documents required to be submitted by every bidder at the time and date specified in the public notice to prospective bidders shall be found in Section 10.

Failure to submit the required documents shall render the bid submission as non-responsive and the bid shall not be considered. The division of the Bid Specifications into parts is merely for convenience and ready reference; all parts of the Bid Specifications constitute a single document.

1.5 QUESTIONS CONCERNING SPECIFICATIONS

All questions concerning these specifications, current practices and policies of the Township of Deptford must be addressed in writing to:

Sharon Paynter, QPA
Township of Deptford
1011 Cooper Street
Deptford, NJ 08096

- A. The bidder understands and agrees that its bid is submitted on the basis of the specifications prepared by the Township. The bidder accepts the obligation to become familiar with these specifications.
- B. Bidders are expected to examine the specifications and related documents with care and observe all their requirements. Ambiguities, errors or omissions noted by bidders should be promptly reported in writing to the appropriate Township official. In the event the bidder fails to notify the Township of such ambiguities, errors or omissions, the bidder shall be bound by the specifications as written.
- C. No oral interpretation of the meaning of the specifications will be made to any bidder. Every request for an interpretation shall be in writing addressed to the Township Qualified Purchasing Agent. In order to be given consideration, written requests for interpretation shall be received at least five (5) days prior to the date fixed for the opening of the bid. Any and all such interpretation and any supplemental instructions will be in the form of written clarifications and/or addenda to the specifications, and will be distributed to all prospective bidders, in accordance with N.J.S.A. 40A:11-23. All addenda so issued shall become part of the contract documents, and shall be acknowledged by the bidder in the bid. The Township's interpretation or corrections thereof shall be final.

1.6 SITE INVESTIGATION AND REPRESENTATION

The Bidders acknowledge that they have satisfied themselves as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power and uncertainties of weather, physical conditions at the site, the character of equipment and facilities needed preliminary to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this contract. Any failure by the Bidders to acquaint themselves with all the available information concerning these conditions shall not relieve them from the responsibility for estimating properly the difficulty or cost of successfully performing the work.

2. DEFINITIONS

"Bid proposal" means all documents, proposal forms, affidavits, certificates, statements required to be submitted by the bidder at the time of the bid opening.

"Bid guarantee" means the bid bond, cashier's check or certified check submitted as part of the bid proposal, payable to the contracting unit, ensuring that the successful bidder will enter into a contract.

"Bid specifications" means all documents requesting bid proposals.

“Certificate of insurance” means a document showing that an insurance policy has been written and includes a statement of the coverage of the policy.

“Consent of surety” means a promissory note guaranteeing that if the contract is awarded, the surety will provide a performance bond.

“Contract” means the written agreement executed by and between the successful bidder and the governing body and shall include the bid proposal, and the bid specifications.

“Contract administrator” is the person authorized by the contracting unit to procure and administer contracts for services.

“Contracting unit” means a municipality or any board, commission, committee, authority or agency, and which has administrative jurisdiction over any district other than a school district, project, or facility, included or operating in whole or in part, within the territorial boundaries of any county or municipality which exercise functions where are appropriate for the exercise by one or more units of local government, and which has statutory power to make purchases and enter into contracts or agreements for the performance of any work of the furnishing or hiring of any materials or supplies usually required, the costs or contract price of which is to be paid with or out of public funds.

“Contractor” means the lowest responsive, responsible bidder to whom award of the contract shall be made.

“Governing body” means the governing body of the Township of Deptford, when the contract or agreement is to be entered into by, or on behalf of a, municipality as further defined at N.J.A.C. 40A:11-2.

“Legal newspaper” means the Courier Post and South Jersey Times.

“Proposal forms” mean those forms that must be used by all bidders to set forth the prices for services to be provided under the contract.

“Surety” means a company that is duly certified to do business in the State of New Jersey and that is qualified to issue bonds in the amount and of the type and character required by these specifications.

3. BID SUBMISSION REQUIREMENTS

3.1 BID PROPOSAL

- A. Each document in the bid proposal must be properly completed in accordance with N.J.A.C. 7:26H-6.5. No bidder shall submit the requested information on any form other than those provided in these bid specifications.
- B. Bid Proposals shall be hand delivered or mailed in a sealed envelope, and the name and address of the bidder and the name of the bid as set forth in the Public Advertisement for Bids must be written clearly on the outside of the

sealed envelope. No bid proposal will be accepted past the date and time specified by the TOWNSHIP OF DEPTFORD in the advertisement for bids. 8

- C. Each bidder shall sign, where applicable, all bid submissions as follows:
 - 1. For a corporation, by a principal executive officer;
 - 2. For a partnership or sole proprietorship, by a general partner or the proprietor respectively; or
 - 3. A duly authorized representative if:
 - a. The authorization is made in writing by a person described in sections 1 and 2 above; and
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the business.
- D. The bid proposal contains option bids. The Township Council may, at its discretion, award the contract to the bidder whose aggregate bid price for the chosen option, or any combination of options is the lowest responsible bidder; provided, however, the Township Council shall not award the contract based on the bid price for separate options.
- E. Any Bid Proposal that does not comply with the requirements of the bid specifications and N.J.A.C. 7:26H-6.1 et seq., shall be rejected as non-responsive.

3.2 BID GUARANTEE

- A. A Bid Guarantee in the form of a Bid Bond, Cashier's Check or Certified Check, made payable to the TOWNSHIP OF DEPTFORD in the amount of 10% of the highest aggregate of months/options bid submitted, not to exceed twenty thousand dollars (\$20,000) must accompany each Bid Proposal. In the event that the bidder to whom the Contract is awarded fails to enter into the Contract in the manner and within the time required, the award to the bidder shall be rescinded and the bid guaranty shall become the property of the TOWNSHIP OF DEPTFORD.

3.3 EXCEPTIONS TO THE BID SPECIFICATIONS

Any conditions, limitations, provisos, amendments, or other changes attached or added by the bidder to any of the provisions of these Bid Specifications or any changes made by the bidder on the Proposal Forms shall result in the rejection of the Bid Proposal by the Township Council.

3.4 "OR EQUAL" SUBSTITUTIONS

Whenever the Work Specifications identify a brand name, trade name or a manufacturer's name, this designation is used for a classification or descriptive purposes only, and the bidder may substitute an equal product.

3.5 COMPLIANCE

The bidder shall be familiar with and comply with all applicable local, state and federal laws and regulations in the submission of the Bid Proposal and, if the bidder is awarded the contract, in the performance of the contract.

3.6 CONFLICT OF INTEREST AND NON-COLLUSION

Each bidder must execute and submit as part of the Bid Proposal a "Non-Collusion Affidavit" which at a minimum shall attest that:

- A. The bidder has not entered into any agreement or participated in any collusion with any other person, corporate entity or government entity, or competitive bidding either alone or with any other person, corporate entity of government entity in connection with the above named project;
- B. All statements made in the bid proposal are true and correct and made with the full knowledge that the contracting unit relies upon the truth of those statements in awarding the contract; and
- C. No person or business is employed to solicit or secure the contract in exchange for a commission, percentage brokerage agreement or contingency fee unless such person possesses a Certificate of Public Convenience and Necessity and a License issued pursuant to N.J.A.C. 7:26-16 et seq.

3.7 NO ASSIGNMENT OF BID

The bidder may not assign, sell, transfer or otherwise dispose of the Bid or any portion thereof or any right or interest therein. This section is not intended to limit the ability of the successful bidder to assign or otherwise dispose of its duties and obligations under the contract provided that the TOWNSHIP OF DEPTFORD agrees to the assignment or other disposition.

4. AWARD OF CONTRACT

4.1 GENERALLY

- A. The Township Council shall award the contract or reject all bids within the time specified in the invitation to bid, but in no case less than 60 days, 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. All bidders will be notified of the Township Council decision, in writing, by certified mail.

- B. The contract will be awarded to the bidder whose aggregate bid price for the selected option or options is the lowest responsible bid.
- C. The Township Council reserves the right to reject any bid not prepared and submitted in accordance with the provisions hereof, and to reject any or all bids. In the event that the Township Commissioners rejects all bids, the TOWNSHIP OF DEPTFORD shall publish a notice of re-bid if it is determined that the project is still viable.

4.2 NOTICE OF AWARD AND EXECUTION OF CONTRACT

Within fourteen calendar days of the award of the contract, the TOWNSHIP OF DEPTFORD shall notify the successful bidder in writing, at the address set forth in the Bid Proposal and such notice shall specify the place and time for delivery of the executed contract, the performance bond, the vehicle dedication affidavit and the appropriate affirmative action documentation. Failure to deliver the aforementioned documents as specified in the notice of award shall be cause for the TOWNSHIP OF DEPTFORD to declare the contractor non-responsive and to award the contract to the next lowest bidder.

4.3 RESPONSIBLE BIDDER

The TOWNSHIP OF DEPTFORD shall determine whether a bidder is “responsible” in accordance with N.J.S.A. 40A:11-6.1 and N.J.A.C. 7:26H-6.8. The Bid Proposal of any bidder that is deemed not to be “responsible” shall be rejected.

4.4 PERFORMANCE BOND

- A. For the awarded contract term, the successful bidder shall provide a performance bond issued by a Surety in an amount equal to no more than 100% of the award price. The successful bidder shall provide said performance bond concurrent with the executed contract, delivered to the Township of Deptford Municipal Clerk at the Township of Deptford Municipal Building.
- B. Failure to provide the required performance bond at the time and place specified by the TOWNSHIP OF DEPTFORD shall be cause for assessment of damages as a result thereof in accordance with Section G below. In the event that the successful bidder fails to provide said performance bond, the TOWNSHIP OF DEPTFORD may award the contract to the next lowest responsible bidder or terminate the bid process and re-bid the collection services in accordance with N.J.A.C. 7:26H-6.7(d) and Section A above. 13

4.5 AFFIRMATIVE ACTION REQUIREMENTS

- A. If awarded a contract, the successful bidder will be required to comply with the requirements of N.J.S.A 10:5-31 et seq. and N.J.A.C. 17:27 et seq.

- B. Within seven days after receipt of notification of the Township of intent to award any contract the contractor must submit one of the following to the contracting unit:
1. If the Contractor has a federal affirmative action plan approval which consists of a valid letter from the Office of Federal Contract Compliance Programs, the Contractor should submit a photo copy of its letter of approval.
 2. If the Contractor has a certificate of employee information report, the Contractor shall submit a photo copy of the certificate.
 3. If the Contractor has none of the above, the contracting unit shall provide the Contract with an (A.A. 302) affirmative action employee information report.
- C. If the Contractor does not submit the affirmative action document within the required time period the TOWNSHIP OF DEPTFORD may extend the deadline by a maximum of the fourteen calendar days. Failure to submit the affirmative action document by the fourteenth calendar day shall be cause for the TOWNSHIP OF DEPTFORD to declare the Contractor to be non-responsive and to award the contract to the next lowest bidder.

4.6 ERRORS IN PRICE CALCULATION

Any discrepancy between a numerical price and a price written in words shall be resolved in favor of the price as written in words. Any discrepancy between the unit price multiplied by the quantity and a corresponding total price figure set forth in the Proposal Form (s) shall be resolved in favor of a total price reached by multiplying the unit price by the quantity. The corrected total shall be used to determine the award of the contract. After all Bid Proposals have been read, the bids will be tabulated and adjusted, if necessary, in accordance with this paragraph. If any mathematical corrections must be made on any bid proposal, then the Township of Deptford may not award a contract until all tabulations are complete.

4.7 RIGHT TO KNOW

Right To Know (RTK) Chemical Labeling: New Jersey Manufacturers are required to include material safety labeling on all chemical containers. To obtain containers with New Jersey RTK labeling for products manufactured outside of New Jersey, a bid specification can include a clause requiring New Jersey RTK labeling as a term on condition of your contract. Owners must also ensure that all containers which are stored at their facilities by contractors display RTK labeling. The options and exclusions from labeling are found in New Jersey Right to Know Act regulations at (N.J.A.C. 8:59-5.1 and 5.2). General information and labeling assistance for bidders is found on the New Jersey Department of Health and Senior Services Right to Know Program website at: www.nj.gov/health/coh/rtk/web/

5. WORK SPECIFICATIONS

5.1 PROPERTY DAMAGE

The contractor shall be liable for damage caused by his servants or agents to Township property and any such loss resulting from the acts of omission of the contractor, his servants or agents, shall be promptly paid. If after ten days notice, such payment is not made by the contractor the Township may pay the same and deduct the amount thereof from the next payment to the contractor. The Manager or his/her designee shall be the sole judge of the reasonableness of all claims submitted and his/her decision shall be final and binding upon the contractor. Contractor shall carry the appropriate property damage insurance as specified within.

5.2 COMPETENCE OF EMPLOYEES

Bidder shall provide information evidencing apprenticeship program.

6. CONTRACTING

6.1 INVOICE AND PAYMENT PROCEDURE

The New Jersey Prompt Payment Act, N.J.S.A. 52:32-32 et seq., requires payment for goods and services within sixty (60) days of the receipt of a properly executed Payment Voucher or within sixty (60) days of receipt and acceptance of goods and services, whichever is later. Properly executed performance security must be received prior to processing any payments for goods and services accepted by state agencies.

The Township of Deptford shall not be responsible for any fines, penalties or assessments by any local, State, County or Federal Agencies incurred by the contractor.

6.2 TERMINATION OF CONTRACT

- A. Any violation of these specifications shall be sufficient cause for the immediate cancellation of the contract by the Township, who may thereupon employ the necessary labor to perform the work or re-advertise or re-let the work, at the expense of the offending Contractor and his sureties.
- B. If, through any cause, the successful bidder shall fail to fulfill in a timely and proper manner obligations under this contract or if the contractor shall violate any of the requirements of this contract, the Township and/or its designee shall thereupon have the right to terminate this contract by giving written notice to the contractor of such termination. Such termination shall relieve the Township and/or its designee of any obligations for balances to the contractor of any sum of sums set forth in the contract.
- C. Notwithstanding the above, the contractor shall not be relieved of liability of the Township and/or its designee for damages sustained by the Township and/or its designee by virtue of any breach of the contract by the contractor. The Township and/or

its designee may withhold any payments to the contractor for the purpose of compensation until such time as the exact amount of the damage due to the Township and/or its designee from the contractor is determined.

- D. The contractor agrees to indemnify and hold the Township and/or its designee harmless from any liability to subcontractors/suppliers concerning payment for work performed or goods supplied arising out of the lawful termination of the contract by the Township and/or its designee under this provision.
- E. In case of default by the successful bidder, the Township and/or its designee may procure the articles or services from other sources and hold the other successful bidder responsible for any excess cost occasioned thereby.

6.3 EFFECTIVE DATE

The effective date of the contract will be the date both parties have executed same.

6.4 BREACH OF CONTRACT

- A. If the work to be done under these specifications and the contract to be entered into shall be abandoned or not carried on, or if at any time the Manager or Township Engineer shall be of the opinion and shall report to the governing body that the said work is unnecessary or unreasonably delayed, or that the contractor has violated any of the conditions or covenants of these specifications, or contract; or is not making such collection upon scheduled time, the Manager shall have the right and power to notify the contractor to discontinue all work or any part thereof as the Manager may designate.
- B. Township shall thereupon have power to contract for the completion of the work, and, at its option, to hire so much equipment and to place such and so many persons on the work as it may deem advisable, by contract or otherwise to complete the work as herein described, or so much thereof as shall be necessary and to charge the expense of said labor, material and equipment to the contractor.
- C. The expense so charged shall be deducted and paid by the Manager of the Township out of such monies as may be either due or may at anytime thereafter become due to the contractor under the contract or any part thereof. In the event the expense is greater than the sum which would have been payable under this contract, the contractor shall remit the amount of such excess to the Manager; the surety bond or bonds herein mentioned shall be security for the indemnification of the Township.
- D. It is hereby stipulated and agreed that in the event of a labor strike or other emergency the contractor shall not forfeit his contract by reasons thereof for the duration of such strike or Act of God; provided however, that the cost of performing the work specified in such contract to be done during such period shall be charged to the contractor as in the case of a default by him.

- E. The contractor hereby agrees that in the event of such default, if the expense of carrying out of the contract shall exceed the cost of the work under the contract, the contractor will reimburse the Township for any expense over the cost of the work under the contract. The Contractor agrees that any breach of contractor specifications shall give the Township the right (in addition to its other rights under these specifications) to utilize the rights reserved under this section. A strike contingency plan must be submitted at the time of the pre-bid meeting.

6.5 INDEMNIFICATION

The Contractor shall indemnify and hold harmless the TOWNSHIP OF DEPTFORD from and against all claims, damages, losses, and expenses including all reasonable expenses incurred by the TOWNSHIP OF DEPTFORD on any of the aforesaid claims that may result or arise directly or indirectly, from or by reason of the performance of the contract or from any act or omission by the Contractor, its agents, servants, employees or subcontractors, that results in any loss of life or property, or in any injury or damage to persons or property.

7. INSURANCE REQUIREMENTS

The Contractor shall take out and maintain in full force and effect at all times during the life of this Contract insurance in conformance with the requirements of N.J.A.C. 7:26H-6.19. The insurance policy shall name the TOWNSHIP OF DEPTFORD as an Additional Named insured indemnifying the TOWNSHIP OF DEPTFORD with respect to the Contractor's actions pursuant to the Contract.

8. CERTIFICATES

Upon notification by the TOWNSHIP OF DEPTFORD, the lowest responsible bidder shall supply to the Contract Administrator, within five days of notification, a certificate of insurance as proof that the insurance policies required by these specifications are in full force and effect.

9. Prevailing Wage Act Requirements

In accordance with N.J.A.C. 12:60:9.1 and 9.2 as well as N.J.A.C. 12:60-9 Appendix when the lowest bidder's proposal is 10 percent or greater below the second lowest bidder's proposal, the contractor will be required to furnish a certification that prevailing wages will be paid to all required employees. The form will be provided to the lowest bidder at the time of contract signing.

N.J.S.A. 34:11-56.27 requires that all bid documents state that all work performed during the contract period on this project shall be paid at prevailing wage rate. **Failure to pay prevailing wages to workers can result in the cancellation of the contract and all contractors and sureties are liable to the public body if proper prevailing wages are not paid.**

10. BIDDING DOCUMENTS

THE BIDDER'S CHECKLIST MUST BE COMPLETED, SIGNED AND SUBMITTED WITH YOUR BID PACKAGE:

10.1 BIDDING DOCUMENTS CHECKLIST

FAILURE TO SUBMIT THE FOLLOWING DOCUMENTS WITH THIS BID IS MANDATORY CAUSE FOR THE BID TO BE REJECTED (N.J.S.A.40A:11-23.2).

Initial below*

- _____ 10.2 A bid guarantee in the form of a bid bond, certified check or cashier's check in the proper amount made payable to the TOWNSHIP OF DEPTFORD
- _____ 10.3 Stockholder statement of ownership
- _____ 10.4 Consent of Surety
- _____ 10.5 Acknowledgement of Receipt of Addenda
- _____ Completed Bidder's Checklist (required with bid)
- _____ Proposal with all options completed – Section 11 (required with bid)
- _____ 10.6 Disclosure of Investment Activities in Iran
- _____ 10.7 Disclosure of Investment in Russia/Belarus

FAILURE TO SUBMIT THE FOLLOWING DOCUMENTS MAY BE CAUSE FOR THE BID TO BE REJECTED (N.J.S.A. 40A:11-23.1(b)).

- _____ 10.8 Non-collusion affidavit
- _____ 10.9 Non-collusion affidavit
- _____ 10.10 Affirmative Action Affidavit
- _____ 10.11 Affirmative Action Evidence of Compliance
- _____ 10.12 Affirmative Action 302 Form (if needed)
- _____ 10.13 Business Registration Certificate
- _____ 10.14 Certificate of Insurance
- _____ 10.15 Performance Bond

Bid Meeting Affidavit. Attendance is NOT mandatory

***Each Requirement above must be initialed.**

**THE UNDERSIGNED HEREBY ACKNOWLEDGES
THE ABOVE LISTED REQUIREMENTS**

Name of Firm or Individual

Title

Signature

Date

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we undersigned

as Principal, and _____, as Surety, are hereby and firmly bound unto the TOWNSHIP OF DEPTFORD, in the penal sum of _____ (\$ _____) Dollars for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns. SIGNED this _____ day of _____, (ADD YEAR). The condition of the above obligation is such that whereas the Principal has submitted to

_____ certain BID attached hereto and hereby made a part hereof to enter into a contract in writing for the

_____.

NOW, THEREFORE,

(a) If said BID shall be rejected, or (b) If said BID shall be accepted and the principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for faithful performance of said contract, and for payment of all persons performing labor furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its BOND shall be in no way impaired or affected by an extension of the time within which the TOWNSHIP OF DEPTFORD 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 such of them as are corporations have caused their corporate seals to be hereunto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal

Date

Surety
By: _____

Date

STOCKHOLDER STATEMENT OF OWNERSHIP

NAME OF CORPORATION OR PARTNERSHIP: _____

STREET ADDRESS: _____

CITY AND STATE: _____ ZIP CODE: _____

LIST BELOW THE NAMES AND ADDRESSES OF STOCKHOLDERS OR PARTNERS OWNING TEN (10%) PERCENT OF MORE OF THE STOCK OR INTEREST IN THE CORPORATION OR PARTNERSHIP:

NAME: _____

ADDRESS: _____

NAME: _____

ADDRESS: _____

NAME: _____

ADDRESS: _____

NAME: _____

ADDRESS: _____

NAME: _____

ADDRESS: _____

SIGNED: _____

PRINT: _____

ADDRESS: _____

CONSENT OF SURETY

In exchange of the consideration of the premises and of One Dollar (\$1.00), the receipt and sufficiency of which is hereby acknowledged, the undersigned consents and agrees that if the contract, for which the preceding estimate and proposal is made, be awarded to the person or persons submitting the same as contracted it will become bound as surety and guarantor for its faithful performance in an amount equal to one hundred percent (100%) of the Contract, and bound as surety and guarantor for labor and material payment in an amount equal to 100% of the contract price, and will execute them as party of the third part thereto when required to do so by the TOWNSHIP OF DEPTFORD, and if the said Contractor shall omit or refuse to execute such contract if so awarded, it will pay without proof of notice and on demand to the TOWNSHIP OF DEPTFORD the sum to which said Contractor would have been entitled upon the completion of the said contract and the sum which said TOWNSHIP OF DEPTFORD may be obligated to pay another contractor to whom the contract may afterwards be awarded, the amount in such case to be determined by the bids plus the cost, if any, of re-advertising for bids for this work, less the amount of any certified check or bid bond payable to and received by the TOWNSHIP OF DEPTFORD.

In witness whereof, said surety has caused these presents to be signed and attested by a duly authorized officer, and its corporate seal to be hereto affixed this _____ day of _____, 2013.

A corporate acknowledgment and statement to be here attached by the Surety Company.

BY: _____ Surety Company

Attorney-in-fact

ATTEST:

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDA

The undersigned Bidder hereby acknowledges receipt of the following Addenda:

<u>Addendum Number</u>	<u>Dated</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Acknowledged for:

(Print or type Name of Bidder)

By: _____
(Print or type Name of Authorized Individual)

Signature:

Title:

(NOTE: THIS FORM MUST BE COMPLETED AND RETURNED WITH YOUR PROPOSAL.)



DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN FORM

STATE OF NEW JERSEY
 DEPARTMENT OF THE TREASURY - DIVISION OF PURCHASE AND PROPERTY
 33 WEST STATE STREET, P.O. BOX 230 TRENTON, NEW JERSEY 08625-0230

BID SOLICITATION # AND TITLE: _____

VENDOR NAME: _____

Pursuant to N.J.S.A. 52:32-57, et seq. (P.L. 2012, c.25 and P.L. 2021, c.4) any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must certify that neither the person nor entity, nor any of its parents, subsidiaries, or affiliates, is identified on the New Jersey Department of the Treasury's Chapter 25 List as a person or entity engaged in investment activities in Iran. The Chapter 25 list is found on the Division's website at <https://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf>. Vendors/Bidders must review this list prior to completing the below certification. If the Director of the Division of Purchase and Property finds a person or entity to be in violation of the law, she shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

CHECK THE APPROPRIATE BOX

I certify, pursuant to N.J.S.A. 52:32-57, et seq. (P.L. 2012, c.25 and P.L. 2021, c.4), that neither the Vendor/Bidder listed above nor any of its parents, subsidiaries, or affiliates is listed on the New Jersey Department of the Treasury's Chapter 25 List of entities determined to be engaged in prohibited activities in Iran.

OR

I am unable to certify as above because the Vendor/Bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the New Jersey Department of the Treasury's Chapter 25 List. I will provide a detailed, accurate and precise description of the activities of the Vendor/Bidder, or one of its parents, subsidiaries or affiliates, has engaged in regarding investment activities in Iran by completing the information requested below.

Entity Engaged in Investment Activities	_____
Relationship to Vendor/ Bidder	_____
Description of Activities	_____

Duration of Engagement	_____
Anticipated Cessation Date	_____

**Attach Additional Sheets If Necessary.*

CERTIFICATION

I, the undersigned, certify that I am authorized to execute this certification on behalf of the Vendor, that the foregoing information and any attachments hereto, to the best of my knowledge are true and complete. I acknowledge that the State of New Jersey is relying on the information contained herein, and that the Vendor is under a continuing obligation from the date of this certification through the completion of any contract(s) with the State to notify the State in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification. If I do so, I may be subject to criminal prosecution under the law, and it will constitute a material breach of my contract(s) with the State, permitting the State to declare any contract(s) resulting from this certification void and unenforceable.

Signature

Date

Print Name and Title



**CERTIFICATION OF NON-INVOLVEMENT IN PROHIBITED ACTIVITIES
IN RUSSIA OR BELARUS PURSUANT TO P.L.2022, c.3**

CONTRACT / BID SOLICITATION TITLE _____

CONTRACT / BID SOLICITATION No. _____

CHECK THE APPROPRIATE BOX

I, the undersigned, am authorized by the person or entity seeking to enter into or renew the contract identified above, to certify that the Vendor/Bidder is not engaged in prohibited activities in Russia or Belarus as such term is defined in [P.L. 2022, c.3](#),¹ section 1.e, except as permitted by federal law.

I understand that if this statement is willfully false, I may be subject to penalty, as set forth in P.L.2022, c.3, section 1.d.

OR

I, the undersigned am unable to certify above because the person or entity seeking to enter into or renew the contract identified above, or one of its parents, subsidiaries, or affiliates may have engaged in prohibited activities in Russia or Belarus. A detailed, accurate and precise description of the activities is provided below.

Failure to provide such description will result in the Quote being rendered as non-responsive, and the Department/Division will not be permitted to contract with such person or entity, and if a Quote is accepted or contract is entered into without delivery of the certification, appropriate penalties, fines and/or sanctions will be assessed as provided by law.

Description of Prohibited Activity

Attach Additional Sheets if Necessary.

If you certify that the bidder is engaged in activities prohibited by P.L. 2022, c. 3, the bidder shall have 90 days to cease engaging in any prohibited activities and on or before the 90th day after this certification, shall provide an updated certification. If the bidder does not provide the updated certification or at that time cannot certify on behalf of the entity that it is not engaged in prohibited activities, the State shall not award the business entity any contracts, renew any contracts, and shall be required to terminate any contract(s) the business entity holds with the State that were issued on or after the effective date of P.L. 2022, c. 3.

 Signature of Authorized Representative

 Date

 Print Name and Title of Authorized Representative

 Vendor Name

¹ Engaged in prohibited activities in Russia or Belarus" means (1) companies in which the Government of Russia or Belarus has any direct equity share; (2) having any business operations commencing after the effective date of this act that involve contracts with or the provision of goods or services to the Government of Russia or Belarus; (3) being headquartered in Russia or having its principal place of business in Russia or Belarus, or (4) supporting, assisting or facilitating the Government of Russia or Belarus in their campaigns to invade the sovereign country of Ukraine, either through in-kind support or for profit.

NON-COLLUSION AFFIDAVIT

STATE OF NEW JERSEY }
COUNTY OF } s.s.:

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

I am employed by the firm of _____, the bidder submitting
the Bid Proposal for the above named project, in the capacity of _____, and I have
executed the Bid Proposal with full authority to do so. Further, the bidder has not, directly or indirectly, entered
into any agreement, participated in any collusion, or otherwise take any action in restraint of free, competitive
bidding in connection with the above named project. All statements contained in said Bid Proposal and in this
affidavit are true and correct and made with full knowledge that the State of New Jersey and the Township of
Deptford rely upon the truth of the statements contained in this affidavit and in said bid Proposal 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 bona fide established commercial or selling agencies maintained by the

_____.

Name of Firm or Individual Title

Signature Date

Subscribed and sworn to before me this
_____ day of _____, 2013

Notary Public of _____
My Commission expires _____, 20__.

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

GOODS, PROFESSIONAL SERVICE AND GENERAL SERVICE CONTRACTS

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

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union of the contractor's commitments under this chapter 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.

The contractor or subcontractor agrees to make good faith efforts to meet targeted county employment goals established in accordance with N.J.A.C. 17:27-5.2. The contractor or subcontractor agrees to inform in writing its appropriate recruitment agencies including, but not limited to, employment agencies, placement bureaus, colleges, universities, and labor unions, that it does not discriminate on the basis of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, and that it will discontinue the use of any recruitment agency which engages in direct or indirect discriminatory practices.

The contractor or subcontractor agrees to revise any of its testing procedures, if necessary, to assure that all personnel testing conforms with the principles of job related testing, as established by the statutes and court decisions of the State of New Jersey and as established by applicable Federal law and applicable Federal court decisions.

In conforming with the targeted employment goals, the contractor or subcontractor agrees to review all procedures relating to transfer, upgrading, downgrading and layoff to ensure that all such actions are taken without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, consistent with the statutes and court decisions of the State of New Jersey, and applicable Federal law and applicable Federal court decisions. The contractor shall submit to the public agency, after notification of award but prior to execution of a goods and services contract, one of the following three documents:

- Letter of Federal Affirmative Action Plan Approval
- Certificate of Employee Information Report
- Employee Information Report Form AA302 (electronically provided by the Division and distributed to the public agency through the Division's website at www.state.nj.us/treasury/contract_compliance)

The contractor and its subcontractors shall furnish such reports or other documents to the Division of Public Contracts Equal Employment Opportunity Compliance as may be requested by the office 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 Division of Public Contracts Equal Employment Opportunity Compliance for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code at N.J.A.C. 17:27**.

I hereby acknowledge that I have received and read have this document.

Date: _____

Signature: _____

Name: _____

Title: _____

Equal Employment Opportunity/Affirmative Action
Goods, Professional Services & General Service Projects

EEO/AA Evidence

In the event a vendor is awarded a contract, the vendor is required to submit evidence of compliance with N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27.

Vendors are required to submit one of the following:

- Copy of Letter of Federal Approval
- Certificate of Employee Information Report
- Fully Executed Form AA302

For further information see the guidelines at:

http://www.state.nj.us/treasury/contract_compliance/pdf/pa.pdf

I certify that my bid package includes the required evidence per the above list and as found on the State website.

Date: _____

Signature: _____

Name: _____

Title: _____

State of New Jersey

Division of Contract Compliance and Equal Employment Opportunity

Form AA302

Please include your State provided certificate.

BUSINESS REGISTRATION CERTIFICATE

Please include a copy of your Business Registration Certificate here.

CERTIFICATE OF INSURANCE

The Contractor shall take out and maintain in full force and effect at all times during the life of this contract insurance in conformance with the requirements of N.J.A.C. 7:26H-6.17. The insurance policy shall name the Township of Deptford as an Additional Named Insured indemnifying the Township of Deptford with respect to the Contractor's actions pursuant to the contract.

Requirements:

Worker's Compensation – Unlimited coverage and in accordance with New Jersey statutes for Employer's liability.

Comprehensive General and Contractual Liability Insurance –
Policies to include personal liability, property, contractual liability, explosion, collapse and underground hazard coverage, and completed operations coverage for the term of the contract:
Bodily injury limits of \$3,000,000 each person and property damage liability limits of \$5,000,000 each occurrence

Comprehensive Automobile Liability Coverage –
Liabilities limits of \$1,000,000 each person and \$3,000,000 each occurrence and property damage liability limits of \$3,000,000 each occurrence. The insurance certificate shall list the governing body as additional Insured on the Comprehensive general liability, automotive and umbrella policies. Each policy shall contain a provision stating that neither the insured, nor its insurer, may cancel, materially change, or refuse renewal without thirty (30) days prior written notice to the contract administrator.

(Print or type Name of Bidder Acknowledging Requirement)

By: _____
(Print or type Name of Authorized Individual)

Signature Acknowledging Requirement:

Title:

ATTACH A COPY OF THE DECLARATIONS PAGE(S) SHOWING THE ABOVE COVERAGES IN PLACE PRIOR TO AWARD.

PERFORMANCE BOND

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

_____ of _____

as Principal, and _____, a

corporation of the State of _____ and authorized to do business in the State of New Jersey, as Surety, are held and firmly bound unto

_____ as Obligee, in the penal sum of

Dollars (\$ _____), enter into a contract with which contract is made part of this bond the same as though set forth herein:

NOW, if the said principal shall well and faithfully do and perform the things agreed by the said principal to be done and performed according to the terms of said contract, and shall pay all lawful claims of subcontractors, material men, provisions, provender or other supplies or teams, fuel, oil, implements or machinery furnished, used or consumed in the carrying forward, performing or completing of said contract, we agreeing and assenting that this undertaking shall be for the benefit of any subcontractor, material man, laborer, person, firm or corporation having a just claim, as well as for the Oblige herein, then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said Surety hereby stipulates and agrees that no modifications, omissions or additions in or to the terms of the said contract or in or to the plans or specifications shall in anyway affect the obligation of said Surety on its bond.

This bond is given in compliance with the requirements of the statutes of the State of New Jersey in respect to bonds of contractors on public works, Revised Statutes of the State of New Jersey, N.J.S.A. 2A:44-143 to 2A:44-174, both inclusive, and liability hereunder is limited as in said statutes provided.

Signed, sealed and dated this _____ day of _____, 20__.

_____ (SEAL) _____ (SEAL)

SURETY:

Attorney-in-fact

REBID – GENERAL CONSTRUCTION

PROJECT IDENTIFICATION: *NEW RESTROOMS -FASOLA PARK
DEPTFORD TOWNSHIP, NEW JERSEY*

THIS BID IS SUBMITTED TO: *DEPTFORD TOWNSHIP
1011 COOPER STREET
DEPTFORD, NJ 08096
ATTN: DINA ZAWADSKI*

BID DATE: *JANUARY 11, 2023 AT 10:15 AM*

BIDDER’S NAME:

1. The undersigned Bidder proposes and agrees, if the Bid is accepted, to enter into an Agreement with OWNER, in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance as stated in Paragraph 15 of the Instructions to Bidders. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen days after the date of OWNER’s Notice of Award.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement:

(a) Bidder has examined copies of all the Bidding Documents and of the following Addenda (receipt of all which is hereby acknowledged):

Date	Number	Date	Number
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- (b) Bidder has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- (c) Bidder has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in Paragraph 4.2 of the General Conditions, and accepts the determination set forth in Paragraph GC-4.2.2 of the General Conditions, as may be amended by the Supplemental Conditions, of the extent the technical data contained in such reports and drawings upon which Bidder is entitled to rely.
- (d) Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, and studies (in addition to or to supplement those referred to in (c) above) which pertain to the subsurface or physical conditions at the site or otherwise which may affect the cost, progress, performance or furnishing of the Work as Bidder considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 4.2 of the General Conditions; and no additional examinations, investigations, explorations, tests, reports or similar information or data are or will be required by Bidder for such purposes.

- (e) Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
- (f) Bidder has given ARCHITECT written notice of all conflicts, errors or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ARCHITECT is acceptable to Bidder.
- (g) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm, or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

4. Bidder will complete the Work for the price(s) shown.

The bidders shall note their prices in both words and numbers, in case of any discrepancy the price listed in words will govern.

CONTRACT I – GENERAL CONSTRUCTION – NEW BUILDING AND ASSOCIATED SITE WORK - Lump Sum Contract Price:

BASE BID _____ **DOLLARS (\$** _____ **)**

5. Bidder will provide substitute equipment and/or materials (if any) as listed below in lieu of the specified equipment and/or materials in accordance with the General Requirements in Specification Section 01600 – Materials and Equipment.
- a. OWNER may select items of any manufacturer or supplier listed in the following tabulation. Bidder will furnish and install such items selected for a Contract Price equal to the lump sum Contract Price, adjusted by the amount of deduction for the substituted item(s).
 - b. In the following tabulations, the name of the manufacturer or supplier entered on line (a) is the name of the manufacturer or supplier named in the Specifications for that item and the cost for providing that specified item is included in the lump sum Contract Price. If the name of the manufacturer or supplier is not shown on line (a), it is understood that the lump sum Contract Price includes the cost for providing the item furnished by the manufacturer or supplier first named in that portion of the Specification pertaining to the equipment and/or materials being substituted.
 - c. Names of alternative manufacturers and suppliers are shown on lines (b) and (c) with the respective prices to be deducted from the lump sum Contract Price should the OWNER elect to accept the alternative item.

ALTERNATIVE EQUIPMENT AND/OR MATERIALS

Spec. Section	Item and Manufacturer of Supplier	Deduct from Base Bid
_____	(a) _____	_____
	(b) _____	_____
_____	(a) _____	_____
	(b) _____	_____
_____	(a) _____	_____
	(b) _____	_____

6. The following documents are to be attached to and made a condition of this Bid:
- (a) Required Bid Security in the form of Bid Bond.
 - (b) Form of Corporate-Ownership Disclosure
 - (c) Non-Collusion Affidavit
 - (d) Information describing the proposed alternative equipment and/or materials
 - (e) Bidder's Contractor License Number if required by the State where the project is to be constructed.
 - (f) List of Prime Subcontractors

7. The terms used in this Bid which are defined in the General Conditions of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED on _____, 20____.

If Bidder is:

AN INDIVIDUAL

By _____ (SEAL)
(Individual's Name)

doing business as: _____
Business address: _____
Phone No.: _____

A PARTNERSHIP

By _____ (SEAL)
(Firm Name)

(General Partner)
Business address: _____
Phone No.: _____

A CORPORATION

By _____ (SEAL)
(Corporation Name)

(State of incorporation)

By _____
(Name of person authorized to sign)

(Title)

(Corporate Seal)

Attest _____
(Secretary)

Business address: _____
Phone No.: _____

A JOINT VENTURE

By _____
(Name)

(Address)

By _____
(Name)

(Address)

(Each joint venture must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above).

 **AIA**[®] Document A101[™] – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

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

The Owner and Contractor agree as follows.

Init.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS**
- 2 THE WORK OF THIS CONTRACT**
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION**
- 4 CONTRACT SUM**
- 5 PAYMENTS**
- 6 DISPUTE RESOLUTION**
- 7 TERMINATION OR SUSPENSION**
- 8 MISCELLANEOUS PROVISIONS**
- 9 ENUMERATION OF CONTRACT DOCUMENTS**

EXHIBIT A INSURANCE AND BONDS

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 a Modification, 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 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

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

Init.

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User Notes:

(3B9ADA22)

(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:

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

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, 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 (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

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

Item	Price
------	-------

§ 4.2.2 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
------	-------	---------------------------

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

Item	Price
------	-------

§ 4.4 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)
------	-----------------------	-------------------------

§ 4.5 Liquidated damages, if any: (Insert terms and conditions for liquidated damages, if any.)

§ 4.6 Other: (Insert provisions for bonus 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 Architect by the Contractor and Certificates for Payment issued by the 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 Architect 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 Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 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 Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 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.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 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.

§ 5.1.6.2 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 A201–2017;
- .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 A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, 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.)

Init.

§ 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 Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, 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 at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 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.

§ 5.2 Final Payment

§ 5.2.1 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 A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

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

§ 5.3 Interest

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 the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the 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.)

Init.

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- 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 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, 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.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner’s representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor’s representative:
(Name, address, email address, and other information)

Init.

§ 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 A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, 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 A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, 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 Other provisions:

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .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.)

Init.

AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

The Sustainability Plan:

Title	Date	Pages
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Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 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 entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

Init.

AIA[®] Document A201[™] – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

THE OWNER:

(Name, legal status and address)

THE ARCHITECT:

(Name, legal status and address)

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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 a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's 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 the Owner and by Separate Contractors.

§ 1.1.5 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.

§ 1.1.6 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.

§ 1.1.7 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.

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent

consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

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§ 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 Architect does 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,

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assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 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 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 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.

§ 2.3.5 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.

§ 2.3.6 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.

§ 2.4 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 prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

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

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

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

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§ 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 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. 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 Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. 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 Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the 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 and 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. Unless the Architect 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 Work 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.

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§ 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 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 and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, 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 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 Contractor shall secure and pay for the building permit as well as 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 and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect 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 and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that 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 and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

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

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

§ 3.9 Superintendent

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

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner 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 a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 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 Architect's approval. The Architect'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 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

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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 perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect 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 is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is 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 Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner 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 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 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 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 and the Architect 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.

§ 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 Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

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.

§ 3.14 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 or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, 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 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 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 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 or Architect. 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.

§ 3.18 Indemnification

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

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

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The 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. The 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.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the

Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor 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 Contractor 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 Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 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. Review of such submittals 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 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 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.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 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 Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

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

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations

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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 rendered in good faith.

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

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests 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 a Separate Contractor or the subcontractors of a Separate Contractor.

§ 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 Owner 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 Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner 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 or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner 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 or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner 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,

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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 and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. 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 separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 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 and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work,

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promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify 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 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 Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor 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 a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 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 or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor 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, 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 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, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. 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

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect 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 Architect and signed by the Owner 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:

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- .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 Architect 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 Architect 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 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 Architect 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 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 Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's 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 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 Architect will 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

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affect the Contract Sum or Contract Time, the Contractor shall notify the Architect 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 Architect 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 or Architect, of an employee of either, or of a Separate Contractor; (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 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 Architect 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 Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and

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unless objected to by 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 ten days before the date established for each progress payment, the Contractor shall submit to the Architect 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 or Architect require, such as copies of requisitions, and releases and waivers of liens 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 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 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor 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 Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, 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 entitled to payment in the amount certified. The foregoing representations 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 Architect. However, the issuance of a Certificate for Payment will not be a representation that the 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.

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§ 9.5 Decisions to Withhold Certification

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

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .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 withholds certification for payment under Section 9.5.1.3, 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 Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a 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 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 Architect 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 Architect and Owner 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 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.

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

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

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

§ 9.7 Failure of Payment

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

§ 9.8 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 that 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 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 Contractor's list, the Architect 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 Contractor's 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 to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare 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 shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, 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 receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's 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 Architect's final 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 (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 Architect so confirms, the Owner shall, upon application by the Contractor and certification by the 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 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.

§ 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; and
- .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.

§ 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 and 10.2.1.3 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 and 10.2.1.3. 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 or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either 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 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.

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§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 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 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 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 and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor 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, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, 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 to the Owner 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 the Contractor 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 to the Contractor 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.

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§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) 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 Architect, Architect's consultants, 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 and Architect 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 Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the 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 Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's 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 Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to

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the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the 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 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 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 or Separate 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.

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§ 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, 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 Architect timely notice of when and where tests and inspections are to be made so that the 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 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 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 Architect of when and where tests and inspections are to be made so that the 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 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 Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the 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 Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made 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 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 or entities 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 and the 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, 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 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,

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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 be certified by the Initial Decision Maker, upon application, 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 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 the 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 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.

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§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the

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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 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 after 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 GENERAL CONDITIONS

The General Conditions of the Contract for the Construction of Buildings Standard Form of the American Institute of Architects, AIA-A-201-2017, Edition, hereinbefore attached as Pages 1 to 39 inclusive, is hereby supplemented, amended or changed for this Project as follows:

ARTICLE 1 – GENERAL PROVISIONS

1.2 Correlation, and Intent of the Contract Documents

- 1.2.1 Add the Following: Failure to Execute Contract – Failure to comply with any of the requirements of these specifications; to execute the contract within ten days after formal notification, or to furnish security as required, shall be just cause for the annulment of the award, the amount of the proposal guarantee shall become the property of the Owner, not as a penalty, but as liquidated damages. Award may be to the next qualified bidder or the work readvertised or handled as the Owner may elect.

ARTICLE 3 – CONTRACTOR

3.1 General

- 3.1.1 Add the following at the end of this Article: Wherever the words “General Contractor” are used, it shall mean the “Contractor for General Construction”. Whenever the work “Contractors” is used, it shall mean each and every Contractor engaged on the building. On multiple contract work, the work “Contractor” shall refer to a prime Contractor (i.e., one who signs a direct contract with the Owner).

3.3 Supervision and Construction Procedures

- 3.3.2 Add the following: There shall be no drinking of alcoholic beverages, etc., allowed on the premises. No person shall be allowed to remain on the job site under the obvious influence of alcohol or the like.

- 3.3.4 Add: Measurements – Field – Before ordering any material or doing any work, each Contractor or Subcontractor shall verify all measurements at the building and shall be responsible for the correctness of same. No extra charge or compensation will be allowed on account of difference between actual dimensions and the measurements indicated on the drawings: any difference which may be found, shall be submitted to the Architect for consideration and clarification before proceeding with the work.

- 3.3.5 Add: Laying out of the Building – General Contractor shall employ an experienced and competent professional land surveyor, cause him to establish a permanent bench or benches to which easy access may be had during the progress of the work to determine all lines and grades for the work, and to verify same from time to time during the progress of the work. This Contractor shall use the land surveyor to determine the building lines and the exact location of the building.

- 3.5 WARRANTY – Add to this article: No work by any contractor shall be performed so as to void any warranties held by the Owner or another contractor.

- 3.6.1.1 Taxes – Add to this article: Project paid by Government or Public Entities are exempt from NJ Sales tax. The Owner will provide tax exemption documents to the contractor(s).

3.8 Allowances

- 3.8.2.4 Add: Surplus in General Allowance shall be refunded to the Owner at the completion of the work.

- 3.8.3 Add: Surplus from allowances may be used by the Contractor, when approved in writing by the Architect, for labor and materials required for extra work. No additional overhead shall be allowed on monies spent out of this “general allowance”.

3.9 Superintendent

3.9.1 Add the following: The Contractor for General Construction shall be charged with the duty of coordinating the work of the several contractors involved. He shall advise them when the work at the site will be ready for their installations and cooperate with each to expedite the work.

3.10 Contractor's Construction and Submittal Schedules

3.10.4 Add: Within ten (10) calendar days after the award of the contract, a progress schedule shall be submitted by the General Contractor, after conference with all other contractors, and shall be a detailed construction progress schedule, and shall be prepared in the form of a bar diagram drawn to a suitable scale to indicate both estimated and actual progress at any one time of each division of the work and part thereof.

3.10.5 Add: After the progress schedule has been submitted to the Architect and been approved, the General and other contractors shall furnish sufficient forces, construction plant and equipment to insure the prosecution and completion of the work in accordance with the approved progress schedule.

3.10.6 Add: The General Contractor shall indicate on the progress schedule diagram the rate of progress of all contractors, and shall promptly deliver to the Architects two (2) black and white prints of the same, whenever requested by the Owner or Architect.

3.12 Shop drawings, Product Data, and Samples

3.12.7 Add the following: Architect assumes no responsibility for field dimensions.

3.12.8 Add the following: In reviewing shop drawings, the Architect assumes no responsibility for quantities, or for dimensional errors that may be present in the drawings. Final responsibility for dimensional assemblies to be installed in the building shall belong to the Contractor providing and installing same.

3.14 Cutting and Patching

3.14.2 Add: Consult the various divisions for specific requirements. Generally all prime contractors shall either erect their work ahead of the General Contractor, or shall provide reasonably in advance of a set of shop drawings indicating the required location and sized of all openings, sleeves and chaises required. The General Contractor shall place all sleeves, anchors, and bearing plates supplies to him according to these drawings.

ARTICLE 4 – ARCHITECT

4.2 Architect's Administration of the Contract

4.2.3 Add: The Architect will not be expected to expedite the job for the Contractor.

4.2.10 Add the following: If a full-time project representative is provided by the Architect or the Owner, he shall be guided and limited in his authorities, duties, and responsibilities by the articles set forth in AIA Document B-352-1970 Ed, "Duties, Responsibilities and Limitations of Authority of Full-Time Project Representative".

4.2.14 Add: 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 quality of the workmanship shall be determined in relation to the average of workmanship provided by Union tradesmen in the same geographical area. The Architect shall be the sole authority in making such determination.

ARTICLE 6 – CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1 Mutual Responsibility

6.1.3 Add: If the Contractor does not defend such action, the Owner may, and charge the costs thereof to the Contractor.

ARTICLE 7 – CHANGES IN THE WORK

7.2 Change Orders

7.2.1.2 Overhead and profit are hereby fixed at ten percent (10%) each.

7.2.3 Add: No change orders shall be valid until signed by the Owner.

7.4 Minor Changes in the Work

7.4.1 Add: The changes of this nature if authorized by the Architect shall be paid for from the “General Allowance”.

ARTICLE 9 – PAYMENTS AND COMPLETION

9.3 Applications for Payment

9.3.1 Add: Materials delivered but not installed shall be paid for on the basis of 75% of the invoice, and may be contingent upon insurance by the Contractor against theft and vandalism.

9.8 Substantial Completion

9.8.1 Add: The Contractor shall allow access by the Owner to any portion of such building substantially completed, when all bills approved by the Architect have been paid.

9.10 Final Completion and Final Payment

9.10.1 Add: The monies withheld 2% by the Owner from monthly payments to the Contractor shall constitute the final payment, to be paid upon final completion and Architect’s certification.

9.10.2 Add: A proof of payment and affidavit shall be delivered to the surety company and the surety company, after examination as called for in the statement form, shall complete and deliver to the Owner, prior to Contractor’s final payment, the Statement of Surety Company as attached to these specifications. With the request for final payment, the Contractor shall provide all required special guarantees, warranties, and certificates of approval.

ARTICLE 10 – PROTECTION OF PERSONS AND PROPERTY Add:

10.4 Emergencies

10.4.1 Add: The General Contractor shall provide all temporary doors and closures to obtain building security from vandals or burglars as soon as practicable during the course of construction. If a watchman becomes required due to job conditions, then the Owner shall obtain and pay for same.

ARTICLE 11 – INSURANCE AND BONDS

11.1 Contractor’s Insurance and Bonds

11.1.1 Expand as follows:

- a. The Contractor is to provide any pay for a comprehensive liability policy with minimum limits: \$500,000.00 per person per accident and \$1,000,000.00 aggregate per accident and \$500,000.00 aggregate property damage per accident. The limits are to be uniform for each of the following categories:
 1. Automobile – Owner and Non-Owner Liability
 2. Comprehensive General Operation Liability
 3. Contractual Liability including general or specific hold-harmless agreements (refer to NJ Statutes 2A:40A-1 and 2).
 4. Liability for completed Operations
 5. Personal Defamation of Character with limits of \$25,000.00 per person occurrence and \$75,000.00 aggregate.
- b. Workman’s Compensation Insurance shall be provided and paid for by each Contractor in accordance with the laws of the State of New Jersey and shall be sufficient to secure the benefits of the New Jersey Workman’s Compensation Law: provide \$100,000.00 minimum limits under the employer’s liability endorsement.
- c. The Subcontractor shall provide insurance for Workman’s Compensation and comprehensive liability for the same exposures as the Prime Contractor and as detailed in Paragraphs (2) and (b).

11.6 Property Insurance

11.6.1. Add: The contractors and subcontractors are responsible for any and all loss (for any reason whatsoever) that may be sustained to materials stored on the project site before they become an integral part of the building. The contractors and subcontractors shall also be responsible for any loss (for any reason whatsoever) that may be sustained to contractor’s or subcontractor’s tools or equipment. The contractors and subcontractors shall also be responsible for all damage or loss to glass (installed or otherwise).

11.6.2 Add: Neither approval by the Owner nor a failure to disapprove insurance furnished by a Contractor shall release the Contractor of full responsibility for liability for bodily injury or death, and damage and accidents as set forth herein.

11.7 Performance Bond and Payment Bond

11.7.1 Add: The prime contractors will each be required to furnish surety company bonds from an approved surety company in the full amounts of their respective contracts for the faithful performance of the Contract and to guarantee the payment of all labor, materials, subcontracts and incidental work in connection therewith. This shall be in such form as will be approved by the Attorney for the Owner.

ARTICLE 12 – UNCOVERING AND CORRECTION OF WORK

12.2 Correction of Work

12.2.1 Add: The Architect’s services shall be charged at \$175.00 per man hour.

ARTICLE 13 – MISCELLANEOUS PROVISIONS

13.1 Governing Laws

- 13.1.2 Add the following: Attention is called to the following State Laws which apply to Public Work in the State of New Jersey.

CHAPTER 9, TITLE 34, Revised Statutes, providing that the citizens of the State of New Jersey who have resided in the State not less than one (1) year be given preference in employment on public works, Contractors shall employ local labor to the extent that qualified employees are available.

CHAPTER 10, TITLE 34, Revised Statutes, providing in the contract for establishment of an eight-hour working day for laborers, workmen, and mechanics.

CHAPTER 150, LAWS OF 1963, The New Jersey Prevailing Wage Act stipulation of minimum prevailing wages applies to all public projects as they apply in this locality. See Wage Rate Statement which is on file with the Secretary of the Board of Education or the local governing body where applicable. All contractors shall submit payroll records with request for payment as per requirements of the NJ Department of Labor

CHAPTER 2, TITLE 10, Revised Statutes, the Contractor as a condition of the Contract shall and hereby does agree that the following shall be part of the contract.

That no Contractor or Subcontractor, nor any person on his behalf shall discriminate against any employee hired for the performance of work under this contract on account of race, creed, color, or sex.

That there may be deducted from the amount payable to the Contractor by the Owner a penalty of Five Dollars (\$5.00) for each person for each calendar day during which such person is discriminated against in violation of the provisions of the Contract.

CHAPTER 15, TITLE 40, and CHAPTERS 32, and 33 TITLE 52, Revised Statutes and TITLE 18A: 18A-20 whereby the Contractor as a condition of the Contract shall and hereby does agree, that in the performance of the Project, only domestic materials and manufactured and farm products of the United States will be used whenever available.

13.4 Tests and Inspections

- 13.4.7 Add: Testing shall be monitored by or performed by a licensed testing laboratory under a general allowance for testing; as provided for in the division of this specification entitled "Testing", under General Construction.

13.5 Interest

- 13.5.1 Delete and substitute in lieu of : Any monies authorized by the Architect not paid within 35 days of that time noted in the Agreement shall bear interest at the rate of one (1) point over Prime, from that date of payment established in the Agreement.

ARTICLE 14 – TERMINATION OR SUSPENSION OF THE CONTRACT

14.2 Termination by the Owner for Cause – Add:

- 14.2.5 The expense of finishing the work shall include compensation for additional architectural, at \$175.00 per man per hour, managerial and administrative services, including legal charges, as well as any additional financial expense incurred. The expenses incurred by the Owner as herein provided, and the damage incurred through Contractor's default, shall be certified by the Architect, whose certificate thereof shall be conclusive. A strike of over twenty (20) working days shall be cause for termination of contract under these conditions. "Strikes" in this instance shall mean local type jurisdictional or "wild-cat" strikes, and not Union-wide contract connected strikes.

ARTICLE 15 – CLAIMS AND DISPUTES

15.4 Arbitration

15.4.2 Add: The scope of the arbitration shall include both the facts and the issues of the dispute, and its award shall be binding on all parties

ARTICLE 16 – SUPPLEMENTARY PROVISIONS ADD:

16.1 Job Site Meetings

Regularly stated job site meetings shall be held as determined by the Architect. Each Contractor, or his authorized representative, who shall be authorized to speak for and/or make decisions for the Contractor, shall attend.

16.2 Temporary Services

- a. Water: The Owner shall provide temporary water for construction.
- b. Heat: Each Contractor shall furnish his own temporary heat as required. When the permanent heating system is completed, and the Owner has occupied the building, the Owner shall operate it and provide heat for the project at the Owner's expense.
- c. Electric: The Electrician will connect to existing electrical service on site. The Electrical Contractor will provide necessary connections and temporary lighting as required.

16.3 Sanitation

The General Contractor shall provide and maintain in clean working order at all times portable enclosed latrines in the quantity to accommodate all the workmen on the job.

16.4 Time of Completion

The date of substantial completion of the contract or contracts shall be as follows:

180 days from Notice to Proceed

AIA[®] Document G706A[™] – 1994

Contractor's Affidavit of Release of Liens

PROJECT: *(Name and address)*

ARCHITECT'S PROJECT
NUMBER:

OWNER:

ARCHITECT:

TO OWNER: *(Name and address)*

CONTRACT FOR:
CONTRACT DATED:

CONTRACTOR:

SURETY:

OTHER:

STATE OF:
COUNTY OF:

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: *(Name and address)*

BY:

*(Signature of authorized
representative)*

(Printed name and title)

Subscribed and sworn to before me on this date:

Notary Public:
My Commission Expires:

CONTRACT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____
_____, as principal, and _____, a corporation organized and existing under
the laws of the State of New Jersey, as Surety, are held and firmly bound unto the _____
_____ in the penal sum of _____ for payment of which well and
truly and to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors
and assigns. Signed this _____ day of _____ Two Thousand _____

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above named Principal
did on the _____ day of _____, 20____, enter into a Contract with
_____ which said Contract is made a part of this bond the same as
though set forth herein:

NOW, if the said _____ shall well and faithfully
do and perform the things agreed by _____ to be done and performed
according to the terms of said Contract, or any changes or modifications therein made, as there provided, and shall
pay all lawful claims of sub-contractors, material men, laborers, persons, firms, or corporations for labor performed,
or materials, provisions, provender or other supplies, or teams, fuels, oils, implements of machinery furnished, used
or consumed in the carrying forward, performing or completing of said contract.; we agreeing and assenting that this
undertaking shall be for the benefit of any subcontractor, material men, laborer, person, firm or corporation having a
just claim, as well as for the obligee herein, and completes all requirements of the one-year guarantee; then this
obligation shall be void. Otherwise the same remains in full force and effect, it being expressly understood and
agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of
this obligation as herein stated. The said surety hereby stipulates and agrees that no modifications, omissions or
additions in or to terms of said contract or in or to the plans or specifications therefore, shall in anywise affect the
obligations of said Surety on its bond.

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

Witness:

(SEAL)

By _____
Principal – Individual

By _____
Attorney-in-fact

Witness:

Principal – Partnership

(SEAL)
(SEAL)
(SEAL)

By _____
Attorney-in-fact

Attest:

Secretary

Principal-Partnership

By _____
President

(CORPORATE SEAL)

Attest:

By _____
Attorney-in-fact



AIA[®]

Document G704™ – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*

CONTRACT INFORMATION:

Contract For:

Date:

CERTIFICATE INFORMATION:

Certificate Number: 001

Date:

OWNER: *(name and address)*

ARCHITECT: *(name and address)*

CONTRACTOR: *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.
(Identify the Work, or portion thereof, that is substantially complete.)

ARCHITECT *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE OF SUBSTANTIAL COMPLETION

WARRANTIES

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:
(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within () days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:

(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE

OWNER *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE

SECTION 011000 – SUMMARY OF WORK

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 WORKED COVERED BY CONTRACT DOCUMENTS

- A. The Project consists of the construction of new restroom facilities located in Fasola Park, in Deptford Township, New Jersey.
 - 1. Locations:
 - a. Fasola Park, 12 Sycamore Lane, Deptford, New Jersey 08096
 - 2. Owner: Deptford Township
- B. Contract Documents, dated December 2022, were prepared for the Project by Joseph F. McKernan, Jr., Architects and Associates, 100 Dobbs Lane, Suite 204, Cherry Hill, New Jersey 08034.
- C. The Site Improvement and Utility plans and specifications were prepared independently by Bryson Yates, Consulting Engineers, LLC, Township Engineers
- D. The Work will be bid under multiple prime contracts as follows:
 - 1. Contract -1, General Construction – New building and related utility and site work.
- E. The scope of work consists of all labor, materials, and equipment for the construction of the Restroom Facility, complete with all necessary materials and accessories as indicated on the construction documents. The scope of work includes all site improvements except the water and sewer mains from the street to the building, these will be installed by the DTMUA, refer to the utility site plans.

1.3 WORK UNDER OTHER CONTRACTS

- A. The successful bidders will cooperative fully with separate contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

1.4 WORK SEQUENCE: - All work shall be performed in a sequence that will assure that the projects are completed in a timely faction without any delays caused be the contractor’s negligence.

1.5 CONTRACTOR USE OF PREMISES

- A. General: **During the construction period the Contractors shall be restricted to areas of work only.** The Contractor’s use of the premises is limited only by the Owner’s right to perform work or to retain other contractors on portions of the Project.

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing allowances.
 - 1. Certain materials and equipment are specified in the Contract Documents by allowances. In some cases, these allowances include installation. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Lump-sum allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed 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.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.5 LUMP SUM ALLOWANCES

- A. Use the lump sum allowances only as per schedule 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 lump sum 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. At Project closeout, credit unused amounts remaining in the lump sum allowance to Owner by Change Order.

1.6 UNUSED MATERIALS

- A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.
 - 1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

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 – General Allowance (Amount \$15,000): This allowance will be for general work as authorized by the Owner and Architect

END OF SECTION 012100

SECTION 012500 - SUBSTITUTIONS

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.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
 - 1. Multiple Prime Contracts: Provisions of this Section apply to the construction activities of each prime contractor.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.
 - 2. Division 1 Section "Submittals" specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.
 - 3. Division 1 Section "Materials and Equipment" specifies requirements governing the Contractor's selection of products and product options.

1.3 SUBMITTALS

- A. Substitution Request Submittal: The Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Architect.
 - 1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and according to procedures required for change-order proposals.
 - 2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.
 - 3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.

- g. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.
 - h. The Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
4. Architect's Action: If necessary, the Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. The Architect will notify the Contractor of acceptance or rejection of the substitution within 2 weeks of receipt of the request, or one week of receipt of additional information or documentation, whichever is later. Acceptance will be in the form of a change order.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record noncompliance with these requirements.
- 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents.
 - 3. The request is timely, fully documented, and properly submitted.
 - 4. The specified product or method of construction cannot be provided within the Contract Time. The Architect will not consider the request if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 - 5. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
 - 6. The requested substitution offers the Owner a substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.
 - 7. Where a proposed substitution involves more than one prime contractor, each contractor shall cooperate with the other contractors involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of products.
- B. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012500

SECTION 012600 - 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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing contract modifications.
 - 1. Multiple Prime Contracts: Provisions of this Section apply to the work of each prime contractor.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
 - 3. Division 1 Section "Applications for Payment" for administrative procedures governing Applications for Payment.
 - 4. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 MINOR CHANGES IN THE WORK

- A. The Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time, on AIA Form G710, Architect's Supplemental Instructions.

1.4 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: The Architect will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal requests issued by the Architect are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
 - 2. Within 7 days of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Architect for the Owner's review.
 - a. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

- B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
 - 1. Include a statement outlining the 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 Contract Time.
 - 2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - 4. Comply with requirements in Section "Product Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.
- C. Proposal Request Form: Use AIA Document G709 for Change Order Proposal Requests or Owner's Forms, if applicable.

1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or 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 the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.6 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Proposal Request, the Architect will issue a Change Order for signatures of the Owner and the Contractor on AIA Form G701CMA.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012600

SECTION 012900 - APPLICATIONS FOR PAYMENT

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.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- B. Related Sections: The following Sections contain requirements that relate to this Section.
 - 1. Schedules: The Contractor's Construction Schedule and Submittal Schedule are specified in Division 1 Section "Submittals."

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's Construction Schedule.
 - b. Application for Payment forms, including Continuation Sheets.
 - c. List of subcontractors.
 - d. List of products.
 - e. List of principal suppliers and fabricators.
 - f. Schedule of submittals.
 - 2. Submit the Schedule of Values to the Construction Manager and Architect at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.
 - 3. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of Construction Manager.
 - c. Name of the Architect.
 - d. Project number.
 - e. Contractor's name and address.
 - f. Date of submittal.
 - 4. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of Work.
 - c. Change Orders (numbers) that affect value.
 - d. Dollar value.

- 1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
5. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Break principal subcontract amounts down into several line items.
6. Round amounts to nearest whole dollar; the total shall equal the Contract Sum.
7. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include requirements for insurance and bonded warehousing, if required.
8. Provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
9. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Construction Manager and Architect and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment-Application Times: Each progress-payment date is indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment-Application Forms: Use AIA Document G702CMA and Continuation Sheets G703 as the form for Applications for Payment or forms provided by the Owner
- D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Construction Manager and/or Architect will return incomplete applications without action.
 1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.
 2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit four (4) signed and notarized original copies of each Application for Payment to the Architect by a method ensuring receipt within 24 hours. One copy shall be complete, including waivers of lien and similar attachments, when required.
 1. Send a complete copy of Application for Payment to the Construction Manager at the same time.
 2. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Architect.
- F. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics liens from subcontractors, sub-subcontractors and suppliers for the construction period covered by the previous application.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
 2. When an application shows completion of an item, submit final or full waivers.
 3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - a. Submit final Applications for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 4. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to the Owner.
- G. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Contractor's Construction Schedule (preliminary if not final).
 5. Schedule of principal products.
 6. Submittal Schedule (preliminary if not final).
 7. Copies of building permits.
 8. Copies of authorizations and licenses from governing authorities for performance of the Work.
 9. Initial progress report.
 10. Certificates of insurance and insurance policies.
 11. Performance and payment bonds.
 12. Data needed to acquire the Owner's insurance.
 13. Initial settlement survey and damage report, if required.
- H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.
1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 2. Administrative actions and submittals that shall precede or coincide with this application include:
 - a. Occupancy permits and similar approvals.
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Meter readings.
 - f. Startup performance reports.
 - g. Changeover information related to Owner's occupancy, use, operation, and maintenance.
 - h. Final cleaning.
 - i. Application for reduction of retainage and consent of surety.
 - j. Advice on shifting insurance coverages.
 - k. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- I. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:
1. Completion of Project closeout requirements.
 2. Completion of items specified for completion after Substantial Completion.

3. Ensure that unsettled claims will be settled.
4. Ensure that incomplete Work is not accepted and will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Certified property survey.
7. Proof that taxes, fees, and similar obligations were paid.
8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish, and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 012900

SECTION 013100 - COORDINATION

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.

1.2 SUMMARY

- A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Cleaning and protection.

1.3 COORDINATION

- A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in the 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 assure maximum accessibility for required maintenance, service, and repair.
 - 3. Make provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project closeout activities.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL COORDINATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. All Prime Contractors shall submit a complete daily report to the Construction Manager daily. Report form is attached. Submit requests for information to the CM for distribution to the Design Team. The CM will distribute the Design Team's answer to all Prime Contractors. RFI form is attached.

3.2 CLEANING AND PROTECTION

- A. Each Prime Contractor shall clean and protect construction in progress and adjoining materials in place, during handling and installation of material installed by their own forces. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.
- B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.
- C. 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 during the construction period.
- D. All Prime shall remove all trash and debris generated by their forces to trash container provided by General Contractor daily. Trash container to be located on-site within 150 feet of entrance. General contractor to provide trash containers for all Prime Contractors.
- E. General Contractor to broom clean all floors as required, and weekly as a minimum.

END OF SECTION 013100

SECTION 013200 - PROJECT MEETINGS

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.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:
 - 1. Preconstruction conferences.
 - 2. Preinstallation conferences.
 - 3. Progress meetings.
 - 4. Coordination meetings.
- B. Related Sections: The following Sections contain requirements that relate to this Section:

1.3 PRECONSTRUCTION CONFERENCE

- A. The Construction Manager will schedule a preconstruction conference after execution of the Agreement to review responsibilities and personnel assignments.

1.4 PREINSTALLATION CONFERENCES

- A. The Construction Manager shall conduct a preinstallation conference at the Project Site or other designated location before each construction activity that requires coordination with other construction.
- B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.
 - 1. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5 PROGRESS MEETINGS

- A. Progress meetings will be held at the Project Site at regular intervals as scheduled by the Construction Manager.
- B. Attendance is required by all Prime Contractors.
- C. All Prime Contractors to submit Two Week Look Ahead Plan at the bi-weekly progress meeting.

1.6 COORDINATION MEETINGS

- A. The Construction Manager shall conduct project coordination meetings at regular intervals convenient for all parties involved. Project coordination meetings are in addition to specific meetings held for other purposes, such as regular progress meetings and special preinstallation meetings.
- B. Request representation at each meeting by every party currently involved in coordination or planning for the construction activities involved.
- C. Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting within 5 business days of meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013200

SECTION 013300 - SUBMITTALS

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.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:
 - 1. Contractor's construction schedule.
 - 2. Shop Drawings.
 - 3. Product Data.
 - 4. Samples.
 - 5. Quality assurance submittals.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Applications for Payment" specifies requirements for submittal of the Schedule of Values.
 - 2. Division 1 Section "Coordination" specifies requirements governing preparation and submittal of required Coordination Drawings.
 - 3. Division 1 Section "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.
 - 4. Division 1 Section "Quality Control" specifies requirements for submittal of inspection and test reports.
 - 5. Division 1 Section "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Retain subparagraph below where one submittal has an impact on another.
 - 3. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to with hold action on a submittal requiring coordination with other submittals until all related submittals are received.
 - 4. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.

- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block. Each copy of the submittal is to have a complete submittal data sheet, form is attached.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart-type, contractor's construction schedule. Submit within 30 days after the date established for "Commencement of the Work."
 - 1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values."
 - 2. Revise percentage increments and time requirements below to suit Project.
 - 3. Within each time bar, indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 - 4. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other schedules.
 - 5. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.
- B. Work Stages: Indicate important stages of construction for each major portion of the Work, including submittal review, testing, and installation.
- C. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
- D. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SHOP DRAWINGS

- A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.
- B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:
 - 1. Dimensions.
 - 2. Identification of products and materials included by sheet and detail number.
 - 3. Compliance with specified standards.
 - 4. Notation of coordination requirements.
 - 5. Notation of dimensions established by field measurement.
- C. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.6 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

1.7 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.
 1. Include identification on each sample with full project identification.
 2. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1.8 QUALITY ASSURANCE SUBMITTALS

- A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.
- B. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Division 1 Section "Quality Control."

1.9 ARCHITECT'S ACTION

- A. Except for submittals for the record or information, where action and return is required, the Architect will review each submittal, mark to indicate action taken, and return promptly.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, action stamp. The Architect will mark the stamp appropriately to indicate the action taken, as follows:
 1. "Reviewed Only" – There are no notations or comments on the submittal and, in our opinion, the submittal meets the requirements of the Contract Documents and the CONTRACTOR may release the equipment for production.
 2. "Reviewed with Comments" – Notations have been made on the submittals to insure conformance with the Contract Documents. The CONTRACTOR may release the equipment for production in accordance with the notations.

3. "Review and Resubmit" – When the material submitted is incorrect or insufficient to review properly and it is necessary to see the complete package again.
4. "Rejected" – The submittal does not meet the requirements of the Contract Documents. The CONTRACTOR must submit the specified product.

C. Unsolicited Submittals: The Architect will return unsolicited submittals to the sender without action.

D. Submit all requirements directly to the Architect and submit a copy to the CM. Architect will return submittals directly to the Prime Contractor. Submit ten (10) copies of all required submittal forms.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013300

SECTION 014000 - QUALITY CONTROL

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.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for quality-control services.
- B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality-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 inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- E. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Cutting and Patching" specifies requirements for repair and restoration of construction disturbed by inspection and testing activities.

1.3 RESPONSIBILITIES

- A. Contractor Responsibilities: Contractor shall employ and pay a testing agency selected by the Owner to perform inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services are included in the Contract Sum as the Inspection and Testing Allowance.
 - 1. Where individual Sections specifically indicate that certain inspections, tests, and other quality control services are the Contractor's responsibility, the Owner /Architect shall select the testing agency and Contractor shall employ and pay the qualified independent testing agency to perform quality-control services. Costs for these services are included in the Contract Sum.
 - a. Possible tests that may be requested: soil compaction; concrete compression; CMU compressive strength; others as requested.

2. Where individual Sections specifically indicate that certain inspections, tests, and other quality control services are the Owner's responsibility, the contractor will employ and pay a qualified independent testing agency to perform those services at the direction of the owner.
- B. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
- C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
1. Provide access to the Work.
 2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
 3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
 4. Provide facilities for storage and curing of test samples.
 5. Deliver samples to testing laboratories.
 6. Provide the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 7. Provide security and protection of samples and test equipment at the Project Site.
- D. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.
- C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 014000

SECTION 015000 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

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.

1.2 SUMMARY

- A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.
- B. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Temporary heat and air conditioning.
 - 4. Telephone service.
 - 5. Sanitary facilities, including drinking water.
 - 6. Storm and sanitary sewer.
- C. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage sheds.
 - 2. Temporary enclosures.
 - 3. Temporary project identification signs.
 - 4. Waste disposal services.
 - 5. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities include, but are not limited to, the following:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, and lights.
 - 3. Environmental protection.

1.3 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Environmental protection regulations.
- B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. General: Provide new equipment. If acceptable to the Architect, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.
- C. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- D. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- E. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.
- F. Temporary Offices: Provide prefabricated or mobile units with lockable entrances, operable windows, and serviceable finishes. Provide heated and air-conditioned units on supports adequate for normal loading. Provide separate mobile unit for the owner's Construction Manager with electrical and telephone connections. CM trailer is to be on site for the duration of construction and be large enough to accommodate two employees and occasional meetings.
- G. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- H. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner, CM or Architect. Neither the Owner nor Architect will accept cost or use charges as a basis of claims for Change Orders.
- B. Water Service: Contractor will be permitted to use the existing water service in the building, connect to an exterior hoses bib.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear.
- D. Temporary Lighting: If the contractor performs any work prior to sunrise or after sunset he must provide any temporary lighting adequate to perform the task.
- E. Temporary Telephones: Provide temporary telephone service throughout the construction period for all personnel engaged in construction activities. Install telephone on a separate line for each temporary office and first-aid station.
- F. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.
- G. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
 1. Provide separate facilities for male and female personnel.

3.2 SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.
 1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for small progress meetings.
- C. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.
 1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
 3. Where required make enclosures secure against break-in or out.

- D. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.
- E. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Separate and recycle metals, glass, plastics, clean paper and building materials. Dispose of material lawfully.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Architect.
- B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.
 - 4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.
- C. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.
- D. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.4 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 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.
 - 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, when 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 the 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 the Contractor's property. The Owner reserves the right to take possession of project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts subject to unusual operating conditions.
 - c. Replace lamps burned out or noticeably dimmed by hours of use.
 - 3. Coordinate restoration of permanent construction and site with sitework contractor at completion of project.
 - 4. Restore all area to pre-construction condition.

END OF SECTION 015000

SECTION 016000 - MATERIALS AND EQUIPMENT

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.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section "Submittals" specifies requirements for submittal of the Contractor's Construction Schedule.
 - 2. Division 1 Section "Substitutions" specifies administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
- B. Compatibility of Options: When the Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 - 2. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 3. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 4. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, new at the time of installation.
 - 1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
 - 1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
 - 2. Semiproprietary Specification Requirements: Where Specifications name 2 or more products or manufacturers, provide 1 of the products indicated. No substitutions will be permitted.
 - 3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

END OF SECTION 016000

SECTION 017000 - CONTRACT CLOSEOUT

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.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project record document submittal.
 - 3. Operation and maintenance manual submittal.
 - 4. Submittal of warranties.
 - 5. Final cleaning.
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 16.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.
 - a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise the Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra stock, and similar items.
 - 7. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
 - 8. Complete final cleanup requirements, including touchup painting.
 - 9. Touch up and otherwise repair and restore marred, exposed finishes.

- B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Architect will repeat inspection when requested and assured that the Work is substantially complete.
 2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
 2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
 4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner took possession of and assumed responsibility for corresponding elements of the Work.
 5. Submit consent of surety to final payment.
 6. Submit a final liquidated damages settlement statement.
 7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.
1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner but was not shown on Contract Drawings or Shop Drawings.
 3. Note related change-order numbers where applicable.

4. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.
1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 3. Note related record drawing information and Product Data.
 4. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
 3. Upon completion of markup, submit complete set of record Product Data to the Architect for the Owner's records.
- E. Maintenance Manuals: Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 2-inch (51-mm), 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:
1. Emergency instructions.
 2. Spare parts list.
 3. Copies of warranties.
 4. Wiring diagrams.
 5. Recommended "turn-around" cycles.
 6. Inspection procedures.
 7. Shop Drawings and Product Data.
 8. Fixture lamping schedule.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

- A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
1. Maintenance manuals.
 2. Record documents.
 3. Cleaning.
 4. Warranties and bonds.
 5. Maintenance agreements and similar continuing commitments.

3.2 FINAL CLEANING

- A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Division 1 Section "Construction Facilities and Temporary Controls."
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
 - 1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION 017000

SECTION 017740 - WARRANTIES

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.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers standard warranties on products and special warranties.

- 1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.

- B. Related Sections: The following Sections contain requirements that relate to this Section:

- 1. Division 1 Section "Submittals" specifies procedures for submitting warranties.
 - 2. Division 1 Section "Contract Closeout" specifies contract closeout procedures.
 - 3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.
 - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

- C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

- D. Separate Prime Contracts: Each prime contractor is responsible for warranties related to its own contract.

1.3 DEFINITIONS

- A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

- B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- E. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.
 - 1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within 15 days of completion of that designated portion of the Work.
- B. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Architect, for approval prior to final execution.
- C. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Submit a draft to the Owner, through the Architect, for approval prior to final execution.
 - 1. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- D. Form of Submittal: At Final Completion compile 2 copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
 - 2. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

END OF SECTION 017740

SECTION 033000 - CAST-IN-PLACE CONCRETE

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. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mix water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.
- D. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - 1. Cementitious materials and aggregates.
 - 2. Steel reinforcement and reinforcement accessories.
 - 3. Admixtures.
 - 4. Curing materials.
 - 5. Floor and slab treatments.
 - 6. Bonding agents.
 - 7. Vapor retarders.
 - 8. Joint-filler strips.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
 - 1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- E. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch (25 mm) to the plane of the exposed concrete surface.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

- B. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete.
- B. Joint Dowel Bars: Plain-steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
 - 1. Class: Severe weathering region, but not less than 3S.
 - 2. Nominal Maximum Aggregate Size: 3/4 inch (19 mm).
- C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range Water-Reducing Admixture: ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.6 VAPOR RETARDERS

- A. Vapor Retarder: polyethylene sheet, not less than 10 mils (0.25 mm) thick.

2.7 FLOOR AND SLAB TREATMENTS

- A. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

- B. Penetrating Liquid Floor Treatment: Chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces.
- C. Products: Subject to compliance with requirements, provide the following penetrating liquid floor treatment products or equal:
 - 1. Day-Chem Sure Hard; Dayton Superior Corporation
 - 2. Euco Diamond Hard; Euclid Chemical Co.
 - 3. Seal Hard; L&M Construction Chemicals, Inc.

2.8 CURING MATERIALS

- A. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound:
 - a. Klear-Kote Cure-Sealer-Hardener, 30 percent solids; Burke Group, LLC (The).
 - b. Polyseal WB; ChemMasters.
 - c. UV Safe Seal; Lambert Corporation.
 - d. Lumiseal WB Plus; L&M Construction Chemicals, Inc.

2.9 RELATED MATERIALS

- A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
 - 1. Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.
 - 2. Type I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
 - 3. Type IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.10 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
 - 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
- B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.
- C. Slab-on-Grade: Proportion normal-weight concrete mix as follows:
 - 1. Compressive Strength (28 Days): 4000 psi (27.6 MPa).
 - 2. Maximum Slump: 4 inches (100 mm).

- D. Cementitious Materials: For concrete exposed to deicers, limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements.
- E. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content of 5 percent +/- 1 percent, unless otherwise indicated.
- F. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- G. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing admixture, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

2.11 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Construct forms tight enough to prevent loss of concrete mortar.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
 - 1. Do not use rust-stained steel form-facing material.
- E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- F. Chamfer exterior corners and edges of permanently exposed concrete.
- G. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

- H. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- I. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- J. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor bolts, accurately located, to elevations required.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
 - 1. 28-day design compressive strength.
- C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
 - 3. Use a bonding agent or epoxy-bonding adhesive, as required, at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groove tool marks on concrete surfaces.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
- E. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.
 - 1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

- D. Deposit concrete in forms in horizontal layers no deeper than 24 inches (600 mm) and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Scream slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified and approved in mix designs.
- G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

3.8 FINISHING SLABS

- A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Trowel and Fine-Broom Finish: All slabs and walks shall receive the following surface finish; apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- C. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
 - 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.9 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

3.10 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, as follows:
 - 1. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid epoxy joint filler full depth in saw-cut joints and at least 2 inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article. The scheduling and costs for all testing shall be the responsibility of the contractor.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mix placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 - 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
 - 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
 - a. Cast and field cure one set of four standard cylinder specimens for each composite sample.
 - 6. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7 days and two at 28 days.
 - a. Test two field-cured specimens at 7 days and two at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.
- C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
- D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).
- E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 033000

SECTION 042000 - UNIT MASONRY ASSEMBLIES

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. This Section includes unit masonry assemblies consisting of the following:
 - 1. Concrete masonry units.
 - 2. Decorative concrete masonry units.
 - 3. Mortar and grout.
 - 4. Reinforcing steel.
 - 5. Masonry joint reinforcement.
 - 6. Embedded flashing.
 - 7. Miscellaneous masonry accessories.
 - 8. Expansion joint seals.
- B. Related sections include the following:
 - 1. Division 7 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
- C. Products installed, but not furnished, under this Section include the following:
 - 1. Steel lintels for unit masonry, furnished under Division 5 Section "Metal Fabrications."
 - 2. Hollow-metal frames in unit masonry openings, furnished under Division 8 Section "Steel Frames."

1.3 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops the following net-area compressive strengths (f_m) at 28 days. Determine compressive strength of masonry from net-area compressive strengths of masonry units and mortar types according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.
- B. Provide unit masonry that develops the following net-area compressive strengths (f_m) at 28 days. Determine compressive strength of masonry by testing masonry prisms according to ASTM C 1314.
 - 1. For Concrete Unit Masonry: $f_m = 1500 \text{ psi (10.3 MPa)}$.

1.4 SUBMITTALS

- A. Product Data: For each different masonry unit, accessory, and other manufactured product specified.
- B. Samples for Verification: For the following:

1. Full-size units for each different exposed masonry unit required, showing the full range of exposed colors, textures, and dimensions to be expected in the completed construction.
 2. Accessories embedded in the masonry.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- D. Material Test Reports: From a qualified testing agency indicating and interpreting test results of the following for compliance with requirements indicated:
1. Each type of masonry unit required.
 2. Mortar complying with property requirements of ASTM C 270.
- E. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
1. Each type of masonry unit required.
 - a. Include test data, measurements, and calculations establishing net-area compressive strength of masonry units.
 2. Each cement product required for mortar and grout, including name of manufacturer, brand, type, and weight slips at time of delivery.
 3. Each type and size of joint reinforcement.
 4. Each type and size of anchor, tie, and metal accessory.
- F. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1093 to conduct the testing indicated, as documented according to ASTM E 548.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
1. Protect Type I concrete masonry units from moisture absorption so that, at the time of installation, the moisture content is not more than the maximum allowed at the time of delivery.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by coverings spread on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required.
 - 1. When ambient temperature exceeds 100 deg F (38 deg C), or 90 deg F (32 deg C) with a wind velocity greater than 8 mph (13 km/h), do not spread mortar beds more than 48 inches (1200 mm) ahead of masonry. Set masonry units within one minute of spreading mortar.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows:
 - 1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.

2. Provide bullnose units for outside corners, unless otherwise indicated.

B. Concrete Masonry Units: ASTM C 90 and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi (13.1 MPa).
2. Weight Classification: Lightweight or Medium weight, unless otherwise indicated.
3. Provide Type I, moisture-controlled units.
4. Size (Width): Manufactured to the following dimensions:
 - a. 6 inches (152 mm) nominal; 5-5/8 inches (143 mm) actual.
 - b. 8 inches (203 mm) nominal; 7-5/8 inches (194 mm) actual.
 - c. 10 inches (254 mm) nominal; 9-5/8 inches (244 mm) actual.
 - d. 12 inches (305 mm) nominal; 11-5/8 inches (295 mm) actual.
5. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

C. Decorative Concrete Masonry Units: ASTM C 90 and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi.
2. Weight Classification: Lightweight or Normal weight, unless otherwise indicated.
3. Provide Type I, moisture-controlled units.
4. Size: (Width) 4", 8", 10" or 12" nominal as detailed: 3 5/8", 7 5/8", 9 5/8" or 11 5/8" actual.
5. Finish: Exposed faces to be split-faced, color to be selected from standard selection of the manufacturer;
 - a. Normal-weight aggregate, Rock Face, manufactured by EP Henry Company, Woodbury, NJ
 - b. Color as selected by the Architect and Owner from the standard range of colors.
6. Integral Water Repellent: Provide units made with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E 514, with test period extended to 24 hours, show no visible water or leaks on the back of the test specimen.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Dry-Block; W. R. Grace & Co., Construction Products Division.

2.2 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207.
- D. Mortar Cement: ASTM C 1329.
- E. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch (6.5 mm) thick, use aggregate graded with 100 percent passing the No. 16 (1.18-mm) sieve.
- F. Aggregate for Grout: ASTM C 404.

- G. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.
- H. Water: Potable.
- I. Color additive as selected by Architect.

2.3 REINFORCING STEEL

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M; ASTM A 616/A 616M, including Supplement 1; or ASTM A 617/A 617M, Grade 60 (Grade 400).
 - 1. Install all vertical wall reinforcing steel rods as detailed on the structural drawings, grout cores solid, especially at the holding cells.

2.4 MASONRY JOINT REINFORCEMENT

- A. General: ASTM A 951 and as follows:
 - 1. Wire Size for Side Rods: W2.8 or 0.188-inch (4.8-mm) diameter.
 - 2. Wire Size for Cross Rods: W2.8 or 0.188-inch (4.8-mm) diameter.
 - 3. Provide in lengths of not less than 10 feet (3 m), with prefabricated corner and tee units where indicated.
- B. For single-wythe masonry, provide either ladder or truss type with single pair of side rods and cross rods spaced not more than 16 inches (407 mm) o.c.

2.5 TIES AND ANCHORS, GENERAL

- A. General: Provide ties and anchors, specified in subsequent articles, made from materials that comply with this Article, unless otherwise indicated.
- B. Hot-Dip Galvanized Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
- C. Steel Sheet, Galvanized after Fabrication: ASTM A 366/A 366M cold-rolled, carbon-steel sheet hot-dip galvanized after fabrication to comply with ASTM A 153.
- D. See Structural Steel Drawings for masonry anchors to steel frame.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Fabricate from the following metal complying with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim" and below:
 - 1. Stainless Steel: 0.0156 inch (0.4 mm) thick.
 - 2. Fabricate through-wall metal flashing embedded in masonry from sheet metal indicated above and with ribs at 3-inch (75-mm) intervals along length of flashing to provide an integral mortar bond.
 - 3. Fabricate metal expansion-joint strips from sheet metal indicated above, formed to shape indicated.
 - 4. Fabricate metal drip edges from sheet metal indicated above. Extend at least 3 inches (75 mm) into wall and 1/2 inch (13 mm) out from wall, with a hemmed outer edge bent down 30 degrees.

5. Fabricate metal flashing terminations from sheet metal indicated above. Extend at least 3 inches (75 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and then down into joint 3/8 inch (10 mm) to form a stop for retaining sealant backer rod.
- B. Contractor's Option for Concealed Flashing: For flashing partly exposed to the exterior, use metal flashing specified above. For flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
1. Elastomeric Thermoplastic Flashing: Manufacturer's standard composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy 0.040 inch (1.0 mm) thick with a 0.015-inch- (0.4-mm-) thick layer of rubberized-asphalt adhesive.
 - a. Provide flashing as a complete system with preformed corners, end dams, other special shapes, and seaming materials; all produced by flashing sheet manufacturer.
 2. EPDM Flashing: Manufacturer's standard flashing product formed from a terpolymer of ethylene-propylene diene, complying with ASTM D 4637, 0.040 inch (1.0mm) thick.
- C. Solder and Sealants for Sheet Metal Flashings: As specified in Division 7 Section "Sheet Metal Flashing and Trim."
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by the flashing manufacturer for bonding flashing sheets to each other and to substrates.
- E. Products: Subject to compliance with requirements, provide one of the following:
1. Metal Flashing:
 - a. Cheney Flashing (Sawtooth); Cheney Flashing Company, Inc.
 - b. Keystone 3-Way Interlocking Thruwall Flashing; Keystone Flashing Co.
 2. Elastomeric Thermoplastic Flashing:
 - a. Hyload Flashing Membrane; Hyload Cloaked Flashing System.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Plastic Weep Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, designed to fill head joint with outside face held back 1/8 inch (3 mm) from exterior face of masonry, in color selected from manufacturer's standard.
- C. Cavity Drainage Material: 1 1/2-inch- (38-mm) thick, free-draining mesh; made from polyethylene strands and shaped to avoid being clogged by mortar droppings.
- D. Products: Subject to compliance with requirements, provide one of the following:
1. Cavity Drainage Material:
 - a. Mortar Net; Mortar Net USA, Ltd.
- E. Expansion Joint Seals: Preformed, silicone faced, pre-compressed primary seal foam joint fillers in sizes and profiles shown or as recommended by the manufacturer. Color to match building materials selected from manufacturer's 26 standard colors.

1. Colorseal by Emseal.
2. Joint Master 1200 Series Foam Seal by Inpro, or approved equal.

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
- B. Mortar for Unit Masonry: Comply with ASTM C 270.
 1. Extended-Life Mortar for Unit Masonry: Mortar complying with ASTM C 1142 may be used instead of mortar specified above, at Contractor's option.
 2. Limit cementitious materials in mortar to portland cement, mortar cement, and lime.
 3. For masonry below grade, in contact with earth, and where indicated, use Type S.
 4. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type S.
- C. Grout for Unit Masonry: Comply with ASTM C 476.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 5 of ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 2. Provide grout with a slump of 8 to 11 inches (200 to 280 mm) as measured according to ASTM C 143.

2.9 SOURCE QUALITY CONTROL

- A. Owner will engage a qualified independent testing agency to perform source quality-control testing indicated below:
 1. Payment for these services will be made from the Inspection and Testing Allowance, as authorized by Change Orders.
 2. Retesting of materials failing to meet specified requirements shall be done at Contractor's expense.
- B. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Before installation, examine rough-in and built-in construction to verify actual locations of piping connections.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual widths of masonry units, using units of widths indicated.

- B. Build chases and recesses to accommodate items specified in this Section and in other Sections of the Specifications.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to the opening.
- D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide a continuous pattern and to fit adjoining construction. Where possible, use full-size units without cutting. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.

3.3 CONSTRUCTION TOLERANCES

- A. Comply with tolerances in ACI 530.1/ASCE 6/TMS 602 and the following:
- B. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch (12 mm) maximum.
- C. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), nor 1/2 inch (12 mm) maximum.
- D. For conspicuous horizontal lines, such as exposed lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet (6 mm in 6 m), nor 1/2 inch (12 mm) maximum.
- E. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm). Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch (3 mm).
- F. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
 - 1. Brick – One-half running bond with vertical joint in each course at third point on units in courses above and below.
 - 2. CMU – One-half running bond with vertical joints centered on units above and below.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches (50 mm). Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.

- D. Stopping and Resuming Work: In each course, rack back one-half-unit length for one-half running bond or one-third-unit length for one-third running bond; do not tooth. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.
- F. Fill space between hollow-metal frames and masonry solidly with mortar, unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- H. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- I. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. At fire-rated partitions, install firestopping in joint between top of partition and underside of structure above to comply with Division 7 Section "Firestopping."
- J. Install all vertical steel bar reinforcing as detailed and grout solid, especially at the holding cells.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
- B. Lay solid brick-size masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
 - 1. At cavity walls, bevel beds away from cavity, to minimize mortar protrusions into cavity. As work progresses, trowel mortar fins protruding into cavity flat against the cavity face of the brick.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than the joint thickness, unless otherwise indicated.

3.6 MASONRY JOINT REINFORCEMENT

- A. General: Provide continuous masonry joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcement a minimum of 6 inches (150 mm).
 - 1. Space reinforcement not more than 16 inches (406 mm) o.c.
 - 2. Space reinforcement not more than 8 inches (203 mm) o.c. in foundation walls and parapet walls.

3. Provide reinforcement not more than 8 inches (203 mm) above and below wall openings and extending 12 inches (305 mm) beyond openings.
 - a. Reinforcement above is in addition to continuous reinforcement.
- B. Do not cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
- C. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcing units as directed by manufacturer for continuity at returns, offsets, pipe enclosures, and other special conditions.

3.7 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joints in unit masonry where indicated. Build-in related items as masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 1. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar or rake joint.
 2. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete.
- C. Form expansion joints in brick made from clay or shale as follows:
 1. Form open joint of width indicated, but not less than 3/8 inch (10 mm) for installation of sealant and backer rod specified in Division 7 Section "Joint Sealants." Keep joint free and clear of mortar.
- D. Build in horizontal, pressure-relieving joints where indicated; construct joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 7 Section "Joint Sealants."

3.8 LINTELS

- A. Install steel lintels where indicated. Use galvanized angles at exterior walls.
 1. Steel lintels shall be field primed and painted as directed by the Architect.
- B. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches (610 mm) for block-size units are shown without structural steel or other supporting lintels.
 1. Provide precast lintels made from concrete matching concrete masonry units in color, texture, and compressive strength and with reinforcing bars indicated or required to support loads indicated. Cure precast lintels by the same method used for concrete masonry units.
 2. Provide prefabricated or built-in-place masonry lintels. Use specially formed bond beam units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.
 3. Provide either of above at Contractor's option or provide precast or formed-in-place concrete lintels complying with requirements in Division 3 Section "Cast-in-Place Concrete."
 4. Color and texture of pre-cast masonry lintels shall match the adjacent CMU units.

- C. Provide minimum bearing of 8 inches (200 mm) at each jamb, unless otherwise indicated.

3.9 FLASHING, WEEP HOLES, AND VENTS

- A. General: Install embedded flashing and weep vents in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Unless otherwise indicated, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
- C. Install flashing as follows:
 - 1. At masonry-veneer walls, extend flashing from exterior face of veneer, through veneer, up face of sheathing at least 8 inches (200 mm), and behind air-infiltration barrier.
 - 2. At lintels and shelf angles, extend flashing a minimum of 4 inches (100 mm) into masonry at each end. At heads and sills, extend flashing 4 inches (100 mm) at ends and turn flashing up not less than 2 inches (50 mm) to form a pan.
 - 3. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches (38 mm) or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Division 7 Section "Joint Sealants" for application indicated.
 - 4. Extend sheet metal flashing 1/2 inch (13 mm) beyond face of masonry at exterior and turn flashing down to form a drip.
 - 5. Install metal drip edges beneath flashing at exterior face of wall. Stop flashing 1/2 inch (13 mm) back from outside face of wall and adhere flashing to top of metal drip edge.
 - 6. Install metal flashing termination beneath flashing at exterior face of wall. Stop flashing 1/2 inch (13 mm) back from outside face of wall and adhere flashing to top of metal flashing termination.
 - 7. Cut flashing off flush with face of wall after masonry wall construction is completed.
- D. Install weep vents in the head joints in exterior wythes of the first course of masonry immediately above embedded flashing and as follows:
 - 1. Use plastic weep vents or open head joints to form weep holes.
 - 2. Space weep holes 16 inches o.c.
 - 3. Place cavity drainage material immediately above flashing in cavities.
- E. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

3.10 FIELD QUALITY CONTROL

- A. Contractor will engage a qualified independent testing agency to perform field quality-control testing indicated below.
- B. Mortar properties will be tested per ASTM C 780.
- C. Concrete Masonry Unit Tests: For each type of concrete masonry unit indicated, units will be tested according to ASTM C 140.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Clean brick by the bucket-and-brush hand-cleaning method described in BIA Technical Notes No. 20, using job-mixed detergent solution.
 - 4. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2 applicable to type of stain on exposed surfaces.

3.12 MASONRY WASTE DISPOSAL

- A. Recycling: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Disposal as Fill Material: Dispose of clean masonry waste, including broken masonry units, waste mortar, and excess or soil-contaminated sand, by crushing and mixing with fill material as fill is placed.
 - 1. Crush masonry waste to less than 4 inches (100 mm) in each dimension.
 - 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Division 2 Section "Earthwork."
 - 3. Do not dispose of masonry waste as fill within 18 inches (450 mm) of finished grade.
- C. Excess Masonry Waste: Remove excess, clean masonry waste that cannot be used as fill, as described above, and other masonry waste, and legally dispose of off Owner's property. Recycling of masonry waste is preferred.

END OF SECTION 042000

SECTION 061000 - ROUGH CARPENTRY

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. This Section includes the following:
 - 1. Framing with dimension lumber.
 - 2. Wood furring, grounds, nailers, and blocking.
 - 3. Plywood panels.
 - 4. PVC trim
 - 5. Fiber Cement Soffits

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:
 - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 - 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
- C. Warranty of chemical treatment manufacturer for each type of treatment.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
 - 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
 - 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. SPIB - Southern Pine Inspection Bureau.
 - 3. WCLIB - West Coast Lumber Inspection Bureau.
 - 4. WWPA - Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
 - 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece.
- D. 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.
 - 1. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.
 - 1. Do not use chemicals containing chromium or arsenic.
 - a. Chemical shall be Amine (ACQ)
 - 2. For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items 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, furring, stripping, and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing members less than 18 inches (460 mm) above grade.
 - 4. Wood floor plates installed over concrete slabs directly in contact with earth.

- C. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m).

2.3 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. All framing lumber for use in the exterior walls, interior bearing partition and floor joists shall have a fiber stress certification of 1200 psi. All lumber delivered to the project shall be stamped with the grade of fiber stress rating. If only non-load-bearing framing is included, change title of paragraph below to "Framing" and delete paragraph below.

2.4 SOFFIT

- A. Fiber-Cement Soffit: Panels made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.
 - 1. Basis-of-Design Product: James Hardie, Inc, HardieSoffit panels or a comparable product by one of the following:
 - 2. Pattern: 12-inch- (305-mm-), 16-inch- (406-mm-) and 48-inch (1220 mm) wide sheets as detailed, with smooth texture. Where 48 inch sheets are installed, provide a vinyl "H" molding at all joints.
 - 3. Ventilation: Provide unperforated soffit panels, install vinyl venting strip as detailed.
 - 4. Factory Painting: HardieSoffit, ColorPlus, factory painted, color to be selected from the standard colors

2.5 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items are not specified to receive wood preservative treatment.
- D. Grade: For miscellaneous lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.6 WOOD-BASED STRUCTURAL-USE PANELS

- A. Structural-Use Panel Standards: Provide either all-veneer, mat-formed, or composite panels complying with DOC PS 2, "Performance Standard for Wood-Based Structural-Use Panels," unless otherwise indicated. Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood," where plywood is indicated.

- B. Trademark: Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements.
 - 1. Span Ratings: Provide panels with span ratings required to meet "Code Plus" provisions of APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial."
- C. Miscellaneous Concealed Panels: APA-rated sheathing, Exposure 1, span rating to suit framing in each location.
- D. Plywood Backing Panels: For mounting electrical or telephone equipment, provide thirty (30) fire-retardant-treated plywood panels with grade, C-D Plugged Exposure 1, in thickness indicated or, if not otherwise indicated, not less than 15/32 inch (11.9 mm) thick.

2.7 PVC TRIM MEMBERS

- A. Trim members shall be solid smooth surface PVC members, sizes as noted and detailed on the drawings. All pieces shall be attached using the manufacture's recommended nails or screws, all locations shall be filled flush with the manufacturer's filler.
- B. Products shall be as manufactured by on of the following:
 - 1. AZEK Building Products
 - 2. Versatex Building Products

2.8 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where miscellaneous carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.9 SOFFITS

- A. Fiber-Cement Soffit: Panels made from fiber-cement board that does not contain asbestos fibers; complies with ASTM C 1186, Type A, Grade II; is classified as noncombustible when tested according to ASTM E 136; and has a flame-spread index of 25 or less when tested according to ASTM E 84.
 - 1. Basis-of-Design Product: James Hardie, Inc, HardieSoffit panels or a comparable product by one of the following:
 - a. Same manufacturers listed for fiber-cement siding.

2. Pattern: 12-inch- (305-mm-), 16-inch- (406-mm-) and 48-inch (1220 mm) wide sheets as detailed, with smooth texture. Where 48 inch sheets are installed, provide a vinyl "H" molding at all joints.
3. Ventilation: Provide unperforated soffit panels, install vinyl venting strip as detailed.
4. Factory Painting: HardieSoffit, ColorPlus, factory painted , color to be selected from the standard five (5) colors.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWP A M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
- F. Countersink nail heads on exposed carpentry work and fill holes with wood filler.
- G. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install where shown and where required for screeding or attaching other work. Cut and shape to required size. Coordinate locations with other work involved.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.
- C. Install all required blocking for: pay phones, toilet accessories, signs, lockers, projection screens, appliances, detention equipment, acoustical wall panels, louvers, window casework, window shades, clocks, and any other items requiring wood blocking.

3.3 INSTALLATION OF STRUCTURAL-USE PANELS

- A. General: Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
 1. Comply with "Code Plus" provisions of the above referenced guide.

END OF SECTION 061000

SECTION 061753 – SHOP FABRICATED WOOD TRUSSES

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. This Section includes the following:
 - 1. Triangular-pitched roof trusses.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 06105 "Miscellaneous Carpentry".

1.3 DEFINITIONS

- A. Metal-plate-connected wood trusses include planar structural units consisting of metal-plate-connected members fabricated from dimension lumber and cut and assembled before delivery to Project site.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Engineer, fabricate, and erect metal-plate-connected wood trusses to withstand design loads within limits and under conditions required.
 - 1. Design Loads:
 - 1) 20 PSF Dead load
 - 2) 30 PSF Snow load
 - 3) Unbalanced snow.
 - 4) 33 PSF snow drift at roof intersections.
 - 2. Design trusses to withstand design loads without deflections greater than vertical deflection of 1/240 of span due to total load.
- B. Engineering Responsibility: Engage a fabricator who uses a qualified professional engineer to prepare calculations, Shop Drawings, and other structural data for metal-plate-connected wood trusses. All submittals shall be signed and sealed by a New Jersey licensed Engineer.

1.5 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for lumber, metal-plate connectors, metal framing connectors, bolts, and fasteners.

- C. Shop Drawings detailing location, pitch, span, camber, configuration, and spacing for each type of truss required; species, sizes, and stress grades of lumber to be used; splice details; type, size, material, finish, design values, and orientation and location of metal connector plates; and bearing details.
 - 1. To the extent truss design considerations are indicated as fabricator's responsibility, include structural analysis data signed and sealed by the qualified professional engineer licensed in the State of New Jersey responsible for their preparation.
 - 2. Include truss Shop Drawings signed and sealed by the qualified professional engineer licensed in the State of New Jersey responsible for their preparation.
- D. Material certificates for dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee (ALSC) Board of Review.
- E. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:
 - 1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 - 2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to truss fabricator.
 - 3. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed wood truss installation similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Fabricator's Qualifications: Engage a firm that complies with the standard industry requirements for quality control and is experienced in fabricating metal-plate-connected wood trusses similar to those indicated for this Project and with a record of successful in-service performance:

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store trusses with care and comply with manufacturer's written instructions and TPI recommendations to avoid damage and lateral bending.
- B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.8 SEQUENCING AND SCHEDULING

- A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Metal Connector Plates:
 - a. Alpine Engineered Products, Inc.
 - b. Robbins Manufacturing Company.
 - c. Tee-Lok Corporation.
 - d. Truswal Systems Corporation.
 - e. Or Equal.
 2. Metal Framing Anchors:
 - a. Cleveland Steel Specialty Co.
 - b. Harlen Metal Products, Inc.
 - c. Simpson Strong-Tie Company, Inc.
 - d. United Steel Products Co.
 - e. Or Equal.
 3. Wood Trusses:
 - a. Concord Truss Company
 - b. Or acceptable fabricator

2.2 DIMENSION LUMBER

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
1. NELMA - Northeastern Lumber Manufacturers Association.
 2. NLGA - National Lumber Grades Authority (Canadian).
 3. SPIB - Southern Pine Inspection Bureau.
 4. WCLIB - West Coast Lumber Inspection Bureau.
 5. WWPA - Western Wood Products Association.
- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
- D. Provide dressed lumber, S4S, manufactured to actual sizes required by DOC PS 20 for moisture content specified, to comply with requirements indicated below:
1. Provide dry lumber with 19 percent maximum moisture content at time of dressing.

2.3 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWWA C2 (lumber). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Preservative chemical shall be Ammoniacal or amine, copper quat (ACQ).
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4 kg/cu. m). After treatment, kiln-dry lumber to a maximum moisture content of 19 percent.
- C. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber after drying and discard damaged or defective pieces.

2.4 METAL CONNECTOR PLATES

- A. General: Fabricate connector plates from metal complying with requirements indicated below.
- B. Hot-Dip Galvanized Steel Sheet: Structural-quality steel sheet, zinc coated by hot-dip process complying with ASTM A 653, G60 (ASTM A 653M, Z180) coating designation; Grade 33 and not less than 0.0359 inch (0.91 mm) thick.
- C. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591 (ASTM A 591M), structural-(physical) quality steel sheet, zinc coated by electrodeposition; 33,000-psi (230-MPa) minimum yield strength, coating class C, and not less than 0.0474 inch (1.20 mm) thick.

2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified below for material and manufacture.
 1. Where truss members are exposed to weather or to high relative humidities, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of stainless steel, Type 304 or 316.
- B. Nails, Wire, Brads, and Staples: FS FF-N-105.
- C. Power-Driven Fasteners: CABO NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts and Screws: ASME B18.2.1 (ASME B18.2.3.8M).
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.
- B. Protective Coatings: Provide one of the following coating systems:
 1. SSPC-Paint 22, epoxy-polyamide primer.
 2. SSPC-Paint 16, coal-tar epoxy-polyamide black or dark red paint.
 3. SSPC-Paint 27 and SSPC-Paint 12, basic zinc chromate-vinyl butyral wash primer and cold-applied asphalt mastic.

2.7 FABRICATION

- A. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.
- B. Fabricate metal connector plates to size, configuration, thickness, and anchorage details required to withstand design loadings for types of joint designs indicated.
- C. Assemble truss members in design configuration indicated using jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances of ANSI/TPI 1. Position members to produce design camber indicated.
 - 1. Fabricate wood trusses within manufacturing tolerances of ANSI/TPI 1.
- D. Connect truss members by metal connector plates located and securely embedded simultaneously into both sides of wood members by air or hydraulic press.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- B. Install and brace trusses according to recommendations of TPI and as indicated.
- C. Install trusses plumb, square, and true to line and securely fasten to supporting construction.
- D. Space, adjust, and align trusses in location before permanently fastening and as follows:
 - 1. Truss Spacing: 24 inches (610 mm) o.c.
- E. Anchor trusses securely at all bearing points using metal framing anchors. Install fasteners through each fastener hole in wood framing, anchor according to manufacturer's fastening schedules and written instructions.

3.2 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

3.3 QUANTITY AND PAYMENT

- A. Include all costs for material and labor for complete installations of the trusses in the lump sum price bid for the related item of work as listed in the bid form

END OF SECTION 061753

SECTION 072100 - BUILDING INSULATION

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. This Section includes the following:
 - 1. Insulation at the perimeter foundation and slab.
 - 2. Concealed building insulation.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 9 Section "Gypsum Board Assemblies" for insulation installed as part of metal-framed wall and partition assemblies.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of insulation product specified.
- C. Product test reports from and based on tests performed by a qualified independent testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, water-vapor transmission, water absorption, and other properties, based on comprehensive testing of current products.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products complying with requirements indicated without delaying the Work.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated on Drawings or specified elsewhere in this Section as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-Burning Characteristics: ASTM E 84.
 - 2. Fire-Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect plastic insulation as follows:
 - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 - 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide insulation products by one of the following:
 - 1. Extruded-Polystyrene Board Insulation:
 - a. Amoco Foam Products Company.
 - b. Dow Chemical Co.
 - c. UC Industries, Inc.; Owens-Corning Co.
 - 2. Glass-Fiber Insulation:
 - a. CertainTeed Corporation.
 - b. Owens-Corning Fiberglas Corporation.
 - c. Schuller International, Inc.
 - 3. Rigid Polyisocyanurate Board
 - a. Rmax Opersting LLC
 - b. Equal approved product
 - 4. Mineral-Fiber Insulation, Sound attenuation and Fire stopping:
 - a. Roxul, Inc.

2.2 MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
 - 1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thicknesses, widths, and lengths.
- B. Extruded-Polystyrene Board Insulation: Rigid, cellular polystyrene thermal insulation formed from polystyrene base resin by an extrusion process using hydro chlorofluorocarbons as blowing agent to comply with ASTM C 578 for type and with other requirements indicated below:
 - 1. Type IV, 1.60-lb/cu. ft. (26-kg/cu. m) minimum density, unless otherwise indicated.
 - 2. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 75 and 450, respectively.

3. Use extruded polystyrene board insulation for under slab, cavity wall insulation and curtain wall insulation panels.
- C. Polyisocyanurate Board: To be closed cell polyiso foam core with glass reinforced aluminum facer. Product to be Rmax ECOMAXci, as manufactured by Rmax Operating LLC. AN equal product will be accepted.
1. Thickness of the board to be as noted on the drawings.
 2. Boards shall be secured to the masonry block walls using a method approved by the manufacturer, mastic or pin system.
- D. Faced Mineral-Fiber Blanket Insulation: Thermal insulation combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665, Type III, Class A (blankets with reflective vapor-retarder membrane facing and flame spread of 25 or less); with scrim-kraft.
1. Mineral-Fiber Type: Fibers manufactured from glass, FSK, formaldehyde free, 25% recycled material content.
 2. Flanged Units: Provide blankets fabricated with facing incorporating 5-inch- (127-mm-) wide flanges along edges for attachment to framing members.
 3. "R" value as noted on the plans.
 4. Acoustical attenuation blanket insulation, thickness as noted on the plans.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or that interfere with insulation attachment.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, unsoiled, and has not been exposed at any time to ice and snow.
- C. Extend insulation in thickness indicated 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. Apply single layer of insulation to produce thickness indicated.

3.4 INSTALLATION OF PERIMETER AND UNDER-SLAB INSULATION

- A. On vertical surfaces, set units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.

3.5 INSTALLATION OF GENERAL BUILDING INSULATION

- 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. Seal joints between closed-cell (nonbreathing) insulation 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. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
 - 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.
- D. Set reflective, foil-faced units with not less than 0.75-inch (19-mm) air space in front of foil as indicated.
- E. Install mineral-fiber blankets in cavities formed by framing members according to the following requirements:
 - 1. Use blanket widths and lengths that fill cavities formed by framing members. Where more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
- F. Install the acoustical blankets in the walls as noted, to be full width between framing members and full height of the partition.

3.6 PROTECTION

- A. General: 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 073113 – FIBERGLASS ASPHALT SHINGLES

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. This Section includes the following:
 - 1. Asphalt shingles.
 - 2. Felt underlayment
 - 3. Ice and water dam..
 - 4. Ridge vents.
 - 5. Slope Roof Vents
- B. Related Sections include the following:
 - 1. Division 6 Section Carpentry for roof deck wood structural panels.
 - 2. Division 7 Section "Sheet Metal Flashing and Trim" for metal not part of this Section.

1.3 SUBMITTALS

- A. General: Submit each item in the Article according to the Conditions of the Contract and Division 1 Specifications Sections.
- B. Product Data: For each type of product indicated, including details of construction relative to materials, dimensions of individual components, profiles, textures and colors.
- C. Samples for Initial Selection: To include finishes and colors for each type of asphalt shingle indicated.
 - 1. Include similar Samples of trim and accessories involving color selection.
- D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for asphalt shingles.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide asphalt shingle and related roofing materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class A; ASTM E 108 or UL 790, for application and roof slopes indicated.
- B. Wind-Resistance-Test Characteristics: Where wind resistance fiberglass asphalt shingles are indicated, provide products identical to those tested according to ASTM D3161 or UL 997 and passed. Identify each bundle of asphalt shingles with appropriate markings of applicable testing and inspection agency.

- C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated, weather tight location according to asphalt shingle manufacturer's written instructions. Store underlayment rolls on end on pallets or other raised surfaces. Do not double-stack rolls.
 - 1. Handle, store, and place roofing materials in a manner to avoid significant or permanent damage to roof deck or structural supporting members.
- B. Protect unused underlayment from weather, sunlight, and moisture when left overnight or when roofing work is not in progress.

1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit asphalt shingle roofing to be performed according to manufacturer's written instructions and warranty requirements.
 - 1. Install self-adhering sheet underlayment within the range of ambient and substrate temperatures recommended by manufacturer.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with other warranties made by the Contractor under requirements of the Contract.
- B. Special Project Warranty: Roofing Installer's warranty, on warranty form at end of this Section, signed by roofing Installer, covering Work of this Section, in which roofing Installer agrees to repair or replace components of asphalt shingle roofing that fail in materials or workmanship within the following warranty period:
 - 1. Warranty Period: Thirty (30) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D 3462, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.

1. Products:
 - a. CertainTeed Corporation; Landmark TL series.
 - b. GAF Materials Corporation; Timberline Ultra series.
 - c. Owens Corning; Woodcrest series.

2.3 UNDERLAYMENT MATERIALS

- A. Felts: ASTM D 226, Type I , asphalt-saturated organic felts, nonperforated.
- B. Waterproof Underlayment (Ice Dam) products:
 1. WinterGuard; CertainTeed Corp.
 2. Bituthene Ice and Water Shield; W.R. Grace & Co.
 3. Weather Watch; GAF Building Materials Corp.

2.4 RIDGE VENTS

- A. Rigid Ridge Vent: Manufacturer's standard rigid section high-density polypropylene or other UV-stabilized plastic ridge vent for use under ridge shingles.
 1. Products:
 - a. Air Vent Inc., a CertainTeed Company; ShingleVent II.
 - b. Cor-A-Vent, Inc.; V-Series.
 - c. GAF Materials Corporation; Cobra Rigid Vent II.
- B. Sloping Roof Vents:
 1. Owens-Corning; VentSure or equal product.

2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F 1667; aluminum, stainless-steel, copper, or hot-dip galvanized steel wire shingle nails, minimum 0.120-inch- (3-mm-) diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch- (9.5-mm-) diameter flat head and of sufficient length to penetrate 3/4 inch (19 mm) into solid wood decking or extend at least 1/8 inch (3 mm) through OSB or plywood sheathing.
 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized steel wire with low profile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored; and that provision has been made for flashings and penetrations through asphalt shingles.
3. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 UNDERLAYMENT INSTALLATION

A. Single-Layer Felt Underlayment: Install single layer of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Lap sides a minimum of 2 inches (50 mm) over underlying course. Lap ends a minimum of 4 inches (100 mm). Stagger end laps between succeeding courses at least 72 inches (1830 mm). Fasten with felt underlayment nails.

B. Concealed Woven Valley Lining: Comply with ARMA and NRCA recommendations. Install a 36-inch-(914-mm-) wide felt underlayment centered in valley. Fasten to roof deck with felt underlayment nails.

1. Lap roof deck felt underlayment over valley felt underlayment at least 6 inches (150 mm).

3.3 WATERPROOF UNDERLAYMENT (ICE DAM)

A. Apply waterproof underlayment at eaves and valleys. Cover deck from eaves to at least 48 inches (800 mm) inside the exterior line.

B. At the valleys install a 48 inch wide strip of ice dam underlayment the entire length of the valley.

C. Waterproof Underlayment shall be installed using fasteners as per the manufacturer's recommendation.

3.4 METAL FLASHING INSTALLATION

A. General: Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Sheet Metal Flashing and Trim."

1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.

C. Step Flashings: Install with a headlap of 2 inches (50 mm) and extend over the underlying asphalt shingle and up the vertical surface. Fasten to roof deck only.

D. Rake Drip Edges: Install rake drip edge flashings over underlayment and fasten to roof deck.

E. Eave Drip Edges: Install eave drip edge flashings below underlayment and fasten to roof sheathing.

F. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.5 ASPHALT SHINGLE INSTALLATION

- A. Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with tabs removed, with self-sealing strip face up at roof edge.
- C. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.
- D. Woven Valleys: Extend succeeding asphalt shingle courses from both sides of valley 12 inches (300 mm) beyond center of valley, weaving intersecting shingle-strip courses over each other. Use one-piece shingle strips without joints in the valley.
 - 1. Do not nail asphalt shingles within 6 inches (150 mm) of valley center.
- E. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- F. Ridge Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.
 - 1. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

3.6 ADJUSTING

- A. Replace any damaged material installed under this Section with new materials that meet the specified requirements and match the adjacent materials.

END OF SECTION 073113

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 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes sheet metal flashing and trim in the following categories:
 - 1. Metal flashing.
 - 2. Reglets.
 - 3. Gutters and downspouts.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Sections for through-wall flashing and other integral masonry flashings specified as part of masonry work.
 - 2. Division 7 Section "Joint Sealants" for elastomeric sealants.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.
- C. Shop Drawings of each item specified showing layout, profiles, methods of joining, and anchorage details.
- D. Samples of sheet metal flashing, trim, and accessory items, in the specified finish. Where finish involves normal color and texture variations, include Sample sets composed of 2 or more units showing the full range of variations expected.

PART 2 - PRODUCTS

2.1 METALS

- A. Aluminum: 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 of alloy and temper designated below:

1. Factory-Painted Aluminum Sheet: ASTM B 209 (ASTM B 209M), 3003-H14, with a minimum thickness of 0.040 inch (1.0 mm), unless otherwise indicated.
 2. Extruded Aluminum: ASTM B 221 (ASTM B 221M), alloy 6063-T52, with a minimum thickness of 0.080 inch (2.0 mm) for primary legs of extrusions that are anodized, unless otherwise indicated.
- B. Galvanized Steel Sheet: ASTM A 526, G 90 (ASTM A 526M, Z 275), commercial quality, or ASTM A 527, G 90 (ASTM A 527M, Z 275), lock-forming quality, hot-dip galvanized steel sheet with 0.20 percent copper, mill phosphatized where indicated for painting; not less than 0.0396 inch (1.0 mm) thick, unless otherwise indicated.
- C. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792, Class AZ-50 coating, Grade 40 (ASTM A 792M, Class AZ-150 coating, Grade 275) or to suit project conditions, with 55 percent aluminum, not less than 0.0396 inch (1.0 mm) thick, unless otherwise indicated.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Burning Rod for Lead: Same composition as lead sheet.
- B. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- C. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil (0.4-mm) dry film thickness per coat.
- D. Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.
- E. Elastomeric Sealant: Generic type recommended by sheet metal manufacturer and fabricator of components being sealed and complying with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."
- F. Epoxy Seam Sealer: 2-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior and interior nonmoving joints, including riveted joints.
- G. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- H. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.
- I. Gutter Screen: 1/4-inch (6-mm) hardware cloth installed in sheet metal frames. Fabricate screen and frame of same basic material as gutters and downspouts.
- J. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based.

2.3 FABRICATION, GENERAL

- A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.

- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- D. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- E. Expansion Provisions: Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.4 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
- B. K Gutters with Girth 16 to 20 inches: Fabricate from the following material:
 - 1. Aluminum: 0.032 inch thick.
- C. K Gutters with Girth 21 to 25 Inches: Fabricate from the following material:
 - 1. Aluminum: 0.040 inch thick.
- D. Downspouts: Fabricate from the following material:
 - 1. Aluminum: 0.040 inch thick.
- E. Exposed Trim, Gravel Stops, and Fasciae: Fabricate from the following material:
 - 1. Aluminum: 0.050 inch thick.
- F. Base Flashing: Fabricate from the following material:
 - 1. Aluminum-Zinc Alloy-Coated Steel: 0.0276 thick.

- G. Counterflashing: Fabricate from the following material:
 - 1. Aluminum: 0.0320 inch thick.
- H. Flashing Receivers: Fabricate from the following material:
 - 1. Aluminum: 0.0320 inch thick.
- I. Eave Flashing: Fabricate from the following material:
 - 1. Aluminum: 0.0320 inch thick.
- J. Perforated Soffits: Manufactured Preformed aluminum panels:
 - 1. Aluminum: 0.0320 inches thick.

2.5 ALUMINUM FINISHES

- A. General: Comply with Aluminum Association's (AA) "Designation System for Aluminum Finishes" for finish designations and application recommendations.
- B. High-Performance Organic Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions for aluminum work exposed to view.
 - 1. Fluoropolymer 2-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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.

- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- D. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
 - 1. Use joint adhesive for nonmoving joints specified not to be soldered.
- E. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and solder.
- F. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- G. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Counterflashings: Coordinate installation of counterflashings with installation of assemblies to be protected by counterflashing. Install counterflashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counterflashing joints a minimum of 2 inches (50 mm) and bed with sealant.
- I. Equipment Support Flashing: Coordinate equipment support flashing installation with roofing and equipment installation. Weld or seal flashing to equipment support member.
- J. Roof-Penetration Flashing: Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install flashing as follows:
 - 1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
 - 2. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.
- K. Install continuous gutter screens on gutters with noncorrosive fasteners, arranged as hinged units to swing open for cleaning gutters.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION 076200

SECTION 081113 - STEEL DOORS AND FRAMES

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. This Section includes steel doors and frames.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 4 Section "Unit Masonry" for building anchors into and grouting frames in masonry construction.
 - 2. Division 8 Section "Door Hardware" for door hardware.
 - 3. Division 9 Section "Painting" for field painting primed doors and frames.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Product Data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles, and finishes.
- C. Shop Drawings showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

1.4 QUALITY ASSURANCE

- A. Provide doors and frames complying with ANSI/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Store doors and frames at building site under cover. Place units on minimum 4-inch- high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Steel Doors and Frames:
 - a. Ceco Door Products.
 - b. Curries.
 - c. Kewanee Corp.
 - d. Steelcraft.
 - e. Approved equal

2.2 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI 100 requirements.
1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards:
 - a. Rigid polyurethane conforming to ASTM C 591.
 - b. Unitized steel grid.
 - c. Vertical steel stiffeners.
 - d. Rigid mineral fiber with internal sound deadener on inside of face sheets.
 2. Clearances: Not more than 1/8 inch (3.2 mm) at jambs and heads, except not more than 1/4 inch (6.4 mm) between non-fire-rated pairs of doors. Not more than 3/4 inch (19 mm) at bottom.
- B. Fabricate exposed faces of doors and panels from only cold-rolled steel sheet.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- E. Galvanized Steel Doors, Panels, and Frames: For the following locations, fabricate doors, panels, and frames from galvanized steel sheet according to SDI 112. Close top and bottom edges of doors flush as an integral part of door construction or by addition of minimum 0.0635-inch- (1.6-mm-) thick galvanized steel channels, with channel webs placed even with top and bottom edges. Seal joints in top edges of doors against water penetration.
- F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- G. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.

- H. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- I. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569.
- B. Cold-Rolled Steel Sheets: Carbon steel complying with ASTM A 366, commercial quality, or ASTM A 620, drawing quality, special killed.
- C. Galvanized Steel Sheets: Zinc-coated carbon steel complying with ASTM A 526, commercial quality, or ASTM A 642, drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G 60 coating designation, mill phosphatized.
- D. Supports and Anchors: Fabricated from not less than 0.0478-inch- thick steel sheet; 0.0516-inch- thick galvanized steel where used with galvanized steel frames.
- E. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Where items are to be built into exterior walls, hot-dip galvanize complying with ASTM A 153, Class C or D as applicable.

2.3 DOORS

- A. Steel Doors: Provide 1-3/4-inch- thick doors of materials and ANSI/SDI 100 grades and models specified below, or as indicated on Drawings or schedules:
 - 1. Interior Doors: Grade I, standard-duty, Model 1, full flush design, minimum 0.0635-inch (16 ga.)- thick galvanized steel sheet faces.

2.4 FRAMES

- A. Provide metal frames for doors, according to ANSI/SDI 100, and of types and styles as shown on Drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate exterior frames of minimum 0.0785-inch (14 ga.)- thick galvanized steel sheet. Fabricate interior frames of minimum 0.0635 –inch (16 ga.) thick galvanized steel sheet.
 - 1. Fabricate frames with mitered or coped and continuously welded corners.
- B. Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.
- C. Plaster Guards: Provide minimum 0.0179-inch- thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

2.5 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI 100 requirements.
 - 1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards:
 - a. Rigid polyurethane conforming to ASTM C 591.
 - b. Unitized steel grid.
 - c. Vertical steel stiffeners.
 - 2. Clearances: Not more than 1/8 inch at jambs and heads, except not more than 1/4 inch between non-fire-rated pairs of doors. Not more than 3/4 inch at bottom.
 - 3. Fabricate exposed faces of doors and panels, from only cold-rolled steel sheet.
 - 4. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames."
 - 5. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- B. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts and conceal with body filler.
- C. Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal-insulating door and frame assemblies and tested according to ASTM C 236 or ASTM C 976 on fully operable door assemblies.
 - 1. Unless otherwise indicated, provide thermal-rated assemblies with U-value rating of 0.41 Btu/sq. ft. x h x deg F or better.
- D. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.
- E. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.
- F. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Comply with SSPC-PA 1, "Paint Application Specification No. 1," for steel sheet finishes.
- C. Apply primers and organic finishes to doors and frames after fabrication.

2.7 GALVANIZED STEEL SHEET FINISHES

- A. Surface Preparation: Clean surfaces with nonpetroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coating applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
 - 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.
- B. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply air-dried primer specified below immediately after cleaning and pretreatment.
 - 1. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
 - 1. Place frames before constructing enclosing walls and ceilings.
 - 2. In masonry construction, install at least 3 wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors.
 - 3. In metal stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels.
- C. Door Installation: Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100.

3.2 ADJUSTING AND CLEANING

- A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 081113

SECTION 082550 – FRP FLUSH DOORS AND ALUMINUM FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Section, apply to this section.

1.2 SECTION INCLUDES

- A. Fiberglass reinforced polyester FRP Flush Doors with aluminum frames.

1.3 REFERENCES

- A. AAMA 1503-98 - Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
- B. ANSI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors and Hardware Reinforcings.
- C. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- D. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- E. ASTM D 2583 - Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.
- F. ASTM E 84 - Surface Burning Characteristics of Building Materials.
- G. ASTM E 331 - Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
- H. ASTM F 476 - Security of Swinging Door Assemblies.
- I. SFBC PA 201 - Impact Test Procedures.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.
- B. Water Resistance: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 331 at pressure differential of 7.50 psf. Door shall not have water leakage.
- C. Hurricane Test Standards, Single Door with Single-Point Latching:
 - 1. Uniform Static Load, ASTM E 330: Plus or minus 75 pounds per square foot.
 - 2. Large Missile Impact Test, SFBC PA 201: Passed.

- D. Swinging Door Cycle Test, Doors and Frames, ANSI A250.4: Minimum of 20,000,000 cycles.
- E. Swinging Security Door Assembly, Doors and Frames, ASTM F 476: Grade 40.
- F. Sound Transmission, Exterior Doors, STC, ASTM E 90: Minimum of 25.
- G. Thermal Transmission, Exterior Doors, U-Value, AAMA 1503-98: Maximum of 0.29 BTU/hr x sf x degrees F. Minimum of 55 CRF value.
- H. Surface Burning Characteristics, FRP Doors and Panels, ASTM E 84:
 - 1. Flame Spread: Maximum of 200, Class C.
 - 2. Smoke Developed: Maximum of 450, Class C.
- I. Indentation Hardness, FRP Doors and Panels, Nominal Value, ASTM D 2583: 55.
- J. Abrasion Resistance, Face Sheet, Taber Abrasion Test, 25 Cycles at 1,000 Gram Weight with CS-17 Wheel: Maximum of 0.029 average weight loss percentage.

1.5 SUBMITTALS

- A. Comply with Section 01330 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data, including description of materials, components, fabrication, finishes, and installation.
- C. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections, and details, indicating dimensions, tolerances, materials, fabrication, doors, panels, framing, hardware schedule, and finish.
- D. Samples:
 - 1. Door: Submit manufacturer's sample of door showing face sheets, core, framing, and finish.
 - 2. Color: Submit manufacturer's samples of standard colors of doors and frames.
- E. Test Reports: Submit certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.
- F. Manufacturer's Project References: Submit list of successfully completed projects including project name and location, name of architect, and type and quantity of doors manufactured.
- G. Maintenance Manual: Submit manufacturer's maintenance and cleaning instructions for doors, including maintenance and operating instructions for hardware.
- H. Warranty: Submit manufacturer's standard ten year warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 25 years successful experience.
 - 2. Door and frame components from same manufacturer.

3. Evidence of a compliant documented quality management system.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying opening door mark and manufacturer.
- B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
- C. Handling: Protect materials and finish from damage during handling and installation.

1.8 WARRANTY

- A. Warrant doors, frames, and factory hardware against failure in materials and workmanship, including excessive deflection, faulty operation, defects in hardware installation, and deterioration of finish or construction in excess of normal weathering.
- B. Warranty Period: Ten years starting on date of shipment.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Special-Lite, Inc., PO Box 6, Decatur, Michigan 49045, or approved equal.

2.2 FRP DOORS

- A. Model: SL-17 Flush Doors with SpecLite3 fiberglass reinforced polyester (FRP) face sheets.
- B. Door Opening Size: As indicated on the Drawings.
- C. Construction:
 1. Door Thickness: 1-3/4 inches.
 2. Stiles and Rails: Aluminum Alloy 6063-T5, minimum of 2-5/16-inch depth.
 3. Corners: Mitered.
 4. Provide joinery of 3/8-inch diameter full-width tie rods through extruded splines top and bottom as standard tubular shaped stiles and rails reinforced to accept hardware as specified.
 5. Securing Internal Door Extrusions: 3/16-inch angle blocks and locking hex nuts for joinery. Welds, glue, or other methods are not acceptable.
 6. Furnish extruded stiles and rails with integral reglets to accept face sheets. Lock face sheets into place to permit flush appearance.
 7. Rail caps or other face sheet capture methods are not acceptable.
 8. Extrude top and bottom rail legs for interlocking continuous weather bar.
 9. Meeting Stiles: Pile brush weatherseals. Extrude meeting stile to include integral pocket to accept pile brush weatherseals.
 10. Bottom of Door: Install bottom weather bar with nylon brush weatherstripping into extruded interlocking edge of bottom rail.

D. Face Sheet:

1. Material: SpecLite3 FRP, 0.120-inch thickness, finish color throughout. Abuse-resistant engineered surface.
2. Texture: Pebble.
3. Color: Select from manufactures standard color selection.

E. Core:

1. Material: Poured-in-place polyurethane foam.
2. Density: Minimum of 5 pounds per cubic foot.
3. R-Value: Minimum of 9.

F. Hardware:

1. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.
2. Factory install hardware.

2.3 MATERIALS

A. Aluminum Members:

1. Extrusions: ASTM B 221.
2. Sheet and Plate: ASTM B 209.
3. Alloy and Temper: As required by manufacturer for strength, corrosion resistance, application of required finish, and control of color

B. Components: Door and frame components from same manufacturer.

C. Fasteners:

1. Material: Aluminum, 18-8 stainless steel, or other noncorrosive metal.
2. Compatibility: Compatible with items to be fastened.
3. Exposed Fasteners: Screws with finish matching items to be fastened

2.4 FABRICATION

A. Sizes and Profiles: Required sizes for door and frame units, and profile requirements shall be as indicated on the Drawings.

B. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.

C. Assembly:

1. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
2. Remove burrs from cut edges.

D. Welding: Welding of doors or frames is not acceptable.

- E. Fit:
 - 1. Maintain continuity of line and accurate relation of planes and angles.
 - 2. Secure attachments and support at mechanical joints with hairline fit at contacting members.

2.5 ALUMINUM DOOR FRAMING SYSTEMS

- A. Tubular Framing:
 - 1. Size and Type: As indicated on the Drawings.
 - 2. Materials: Aluminum Alloy 6063-T5, 1/8-inch minimum wall thickness.
 - 3. Applied Door Stops: 0.625-inch high, with screws and weatherstripping. Door stop shall incorporate pressure gasketing for weathering seal. Counterpunch fastener holes in door stop to preserve full metal thickness under fastener head.
 - 4. Frame Members: Box type with 4 enclosed sides. Open-back framing is not acceptable.
 - 5. Caulking: Caulk joints before assembling frame members.
 - 6. Joints:
 - a. Secure joints with fasteners.
 - b. Provide hairline butt joint appearance.
 - 7. Field Fabrication: Field fabrication of framing using stick material is not acceptable.
 - 8. Applied Stops: For side, transom, and borrowed lites and panels. Applied stops shall incorporate pressure gasketing for weathering seal. Reinforce with solid bar stock fill for frame hardware attachments.
 - 9. Hardware:
 - a. Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and hardware schedule.
 - b. Factory install hardware.
 - 10. Anchors:
 - a. Anchors appropriate for wall conditions to anchor framing to wall materials.
 - b. Door Jamb and Header Mounting Holes: Maximum of 24-inch centers.
 - c. Secure head and sill members of transom, side lites, and similar conditions.

2.6 HARDWARE

- A. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.
- B. Factory install hardware.
- C. Hardware Schedule:
 - 1. Install the hardware as scheduled in Section 08710 of this specification.

2.7 ALUMINUM FINISHES

- A. General: Comply with Aluminum Association's (AA) Designation System for Aluminum Finishes" for finish designations and application recommendations.

- B. High Performance Organic Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.
 - 1. Fluoropolymer 2-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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive doors. Notify Architect of conditions that would adversely affect installation or subsequent use. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Ensure openings to receive frames are plumb, level, square, and in tolerance.

3.3 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Install doors plumb, level, square, true to line, and without warp or rack.
- C. Anchor frames securely in place.
- D. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by Architect.
- E. Set thresholds in bed of mastic and backseal.
- F. Install exterior doors to be weathertight in closed position.
- G. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- H. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Manufacturer's representative shall provide technical assistance and guidance for installation of doors.

3.5 ADJUSTING

- A. Adjust doors, hinges, and locksets for smooth operation without binding.

3.6 CLEANING

- A. Clean doors promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that would damage finish.

3.7 PROTECTION

- A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

END OF SECTION 082550

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.
- B. This Section includes the following:
 - 1. Commercial Door Hardware for the following:
 - a. Swinging Doors.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 8 Sections "Hollow Metal Doors and Frame" and "Stile FRP Door and Aluminum Frames"

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final hardware schedule coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - a. Type, style, function, size, and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for hardware.
 - g. Door and frame sizes and materials.
- D. Templates for doors and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.5 QUALITY ASSURANCE

- A. Single Source Responsibility: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer.
- B. All hardware to comply with accessibility requirements, comply with ANSI A117.1 ADA Guidelines

1.6 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.7 MAINTENANCE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. An asterisk (*) indicated the manufacturer, whose product designation is being used in the Finish Hardware Schedule to establish the minimum requirements for quality and appearance.
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Butts and Hinges:
 - a. Hager Hinge Co.
 - b. McKinney Products Co.
 - c. * Stanley Hardware, Div. Stanley Works.
 - d. * Roton, continuous hinges
 - 2. Cylinders and Locks:
 - a. * Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
 - d. * Security locksets, Dormakaba E-Plex, match existing

3. Door Stripping and Seals:
 - a. * Durable Products
 - b. Reese Enterprises, Inc.
 - c. Zero International, Inc.
4. Thresholds:
 - a. * Durable Products
 - b. Reese Enterprises, Inc.
 - c. Zero International, Inc.
5. Stops:
 - a. Rockwood
 - b. * Glynn-Johnson.

2.2 SCHEDULED HARDWARE

- A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:
 1. Manufacturer's Product Designations: The product designation and name of one manufacturer are listed for each hardware type required for the purpose of establishing minimum requirements. Provide either the product designated or, where more than one manufacturer is specified under the Article "Manufacturers" in Part 2 for each hardware type, the comparable product of one of the other manufacturers that complies with requirements.
 2. ANSI/BHMA designations used elsewhere in this Section or in schedules to describe hardware items or to define quality or function are derived from the following standards. Provide products complying with these standards and requirements specified elsewhere in this Section.
 - a. Butts and Hinges: ANSI/BHMA A156.1.
 - b. Bored and Preassembled Locks and Latches: ANSI/BHMA A156.2.
 - c. Template Hinge Dimensions: ANSI/BHMA A156.7.
 - d. Interconnected Locks and Latches: ANSI/BHMA A156.12.
 - e. Materials and Finishes: ANSI/BHMA A156.18.

2.3 MATERIALS AND FABRICATION

- A. Manufacturer's Name Plate: Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A156 series standards for each type of hardware item and with ANSI/BHMA A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

- C. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
- E. Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

2.4 HINGES, BUTTS, AND PIVOTS

- A. Templates: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- B. Screws: Provide Phillips flat-head screws complying with the following requirements:
 - 1. Finish screw heads to match surface of hinges or pivots.
- C. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
 - 1. Interior Doors: Nonrising pins.
 - 2. Tips: Flat button and matching plug, finished to match leaves, except where hospital tip (HT) indicated.
- D. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges per door leaf for doors 90 inches (2250 mm) or less in height and one additional hinge for each 30 inches (750 mm) of additional height.

2.5 LOCK CYLINDERS AND KEYING

- A. Equip locks with cylinders for interchangeable core seven pin tumbler inserts to match County system.
- B. Metals: Construct lock cylinder parts from brass or bronze, stainless steel, or nickel silver.
- C. Key Material: Provide keys of nickel silver only.
- D. Key Quantity: Furnish 3 keys for each lock.

2.6 LOCKS, LATCHES AND BOLTS

- A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set, unless otherwise indicated.
 - 1. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.

- B. Lock Throw: Provide 5/8-inch (16-mm) minimum throw of latch on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
 - 1. Provide 3/4-inch (19-mm) minimum throw of latch for mortise locks. Provide 1-inch (25-mm) minimum throw for all dead bolts.
- D. Flush Bolt Heads: Minimum of 1/2-inch- (13-mm-) diameter rods of brass, bronze, or stainless steel with minimum 12-inch- (300-mm-) long rod for doors up to 84 inches (2100 mm) in height.

2.7 CLOSERS AND DOOR CONTROL DEVICES (By Owner – except automatic operator, rated doors and exterior doors by GC)

- A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
 - 1. Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.
 - 2. Provide parallel arms for all overhead closers, except as otherwise indicated.
- B. Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force and delayed action closing.
- C. Combination Door Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and close door automatically under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts.

2.8 WEATHERSTRIPPING AND SEALS

- A. General: Provide continuous weatherstripping on exterior doors and smoke, light, or sound seals on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. Weatherstripping at Door Bottoms: Provide threshold consisting of contact-type resilient insert and metal housing of design and size shown and of following metal, finish, and resilient seal strip:

2.9 THRESHOLDS

- A. General: Except as otherwise indicated, provide standard metal threshold unit of type, size, and profile as shown or scheduled.
 - 1. For out-swinging doors provide rabbeted type units with replaceable weatherstrip insert in stop.

2.10 HARDWARE FINISHES

- A. Match items to the manufacturer's standard color and texture finish for the latch and lock sets.

- B. Provide finishes that match those established by BHMA or, if none established, match the Architect's sample.
- C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- D. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, and aluminum, except as otherwise indicated. The suffix "-NL" is used with standard finish designations to indicate "no lacquer."
- E. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18, "Materials and Finishes," including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

2.11 SILENCERS

- A. All interior door frames shall be equipped with silencers as follows:
 - 1. Single Door Frames – Furnish 3

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
 - 1. NWWDA Industry Standard I.S.1.7, "Hardware Locations for Wood Doors."
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- C. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements specified in Division 7 Section "Joint Sealers."
- F. Weatherstripping and Seals: Comply with manufacturer's instructions and recommendations to the extent installation requirements are not otherwise indicated.

3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.

1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

3.3 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware," hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.
 1. Hardware sets indicate quantity and item.
 2. Manufacturer, product designation, lockset design, size and finish as indicated below.
 3. Finish to be: US 3/605, Bright Brass, at all doors to match existing.
- B. Cylinder Locksets:
 1. Schlage "L" Series, with 07 Lever Design.
 2. Dormakaba, E-Plex 5200 series electronic security locksets, units to match existing system
- B. Butts: Exterior and Interior doors:
 1. Exterior doors, continuous hinges
 2. Interior doors, 4 ½" x 4 ½" for 1 ¾ doors – Stanley FBB179 or Hager BB1279

3.4 HARDWARE SCHEDULE

- A. General: Hardware for FRP doors to be furnished by hardware supplier.

Note: Coordinate with Door Schedule. All exterior doors to receive weatherstripping and thresholds.

SET 1

1. Continuous Hinge
2. Security lockset coordinate with the Owners IT Department
3. Closer
4. Stops

SET 2

1. Butts, BB
2. Utility Lockset
3. Stop

END OF SECTION 087100

SECTION 089119 – FIXED LOUVERS

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. This Section includes the following:
 - 1. Fixed, extruded-aluminum louver.

1.3 PERFORMANCE REQUIREMENTS

- A. Air-Performance, Water-Penetration, Air-Leakage, and Wind-Driven Rain Ratings: Provide louvers complying with performance requirements indicated, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

1.4 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 or by manufacturer and witnessed by a qualified testing agency, for each type of louver.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify louver openings by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating louvers without field measurements. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Louvers:
 - a. Airolite Company (The), Model #SCH201, or equal.

2.2 MATERIALS

- A. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy 6063-T5 or T-52.
- B. Fasteners: Louver shall be flange style for glazing into the steel frame, see details.

2.3 FIXED, EXTRUDED-ALUMINUM LOUVERS

A. Horizontal Storm-Resistant Louver

- 1. Products:
 - a. Airolite, Model #SCH201, or equal.
- 2. Louver Depth: 2 inches (50 mm)
- 3. Frame and Blade Nominal Thickness: As required to comply with structural performance requirements, but not less than 0.063 inch (1.6 mm)
- 4. Performance Requirements:
 - a. Free Area: 39%
 - b. Air Performance: Not more than 0.10-inch wg (25-Pa) static pressure drop at 600-fpm (3.0-m/s) free-area velocity.
 - c. Wind-Driven Rain Performance: Not less than 99 percent effectiveness when subjected to a rain fall rate of 3 inches (75 mm) per hour and a wind speed of 29 mph (13 m/s).
 - d. Percent free area, 39%.
 - e. Verify availability of seal below for louver sizes indicated, provide any accessories required to assure a water tight installation, top, sides and bottom of the louvers.
- 5. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.4 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
 - 1. Screen Location for Fixed Louvers: Interior face.
 - 2. Screening Type: Insect screening

2.5 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
- B. High-Performance Organic-Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1. Fluoropolymer Two-Coat Coating System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605. Retain one color and gloss from three subparagraphs below.
 - a. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Locate and place louvers and vents level, plumb, and at indicated alignment with adjacent work.
- B. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

END OF SECTION 089119

SECTION 092900 - GYPSUM BOARD ASSEMBLIES

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. This Section includes the following:
 - 1. Gypsum board assemblies attached to wood framing.

1.3 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms for gypsum board assemblies not defined in this Section or in other referenced standards.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.
- B. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 requirements or gypsum board manufacturer's recommendations, whichever are more stringent.
- B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours before application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
- C. Ventilation: Ventilate building spaces as required to dry joint treatment materials. Avoid drafts during hot, dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Gypsum Board and Related Products:
 - a. Georgia-Pacific Corp.
 - b. National Gypsum Co.; Gold Bond Building Products Division.
 - c. United States Gypsum Co.

2.2 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available that will minimize end-to-end butt joints in each area indicated to receive gypsum board application.
1. Widths: Provide gypsum board in widths of 48 inches (1219 mm).
- B. Gypsum Wallboard: ASTM C 36 and as follows:
1. Type: High impact, Sag-resistant type for ceiling surfaces.
 2. Edges: Tapered.
 3. Thickness: 5/8 inch (15.9 mm) unless otherwise indicated.

2.3 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Corner bead, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal or plastic, with metal complying with the following requirement:
 - a. Steel sheet zinc coated by hot-dip process or rolled zinc.
 2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
 - a. Cornerbead on outside corners, unless otherwise indicated.
 - b. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
 - c. One-piece control joint formed with V-shaped slot and removable strip covering slot opening.
 - d. Reveal Bead in ceiling, "Reveal" Stock # 5110, 1/2"x 1/2", or equal, refer to ceiling plan.

2.4 JOINT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
- B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
1. Use pressure-sensitive or staple-attached, open-weave, glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

- C. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use.
 - 1. Ready-Mixed Formulation: Factory-mixed product.
 - a. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
 - b. Topping compound formulated for fill (second) and finish (third) coats.
 - c. All-purpose compound formulated for both taping and topping compounds.

2.5 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.
- C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot-grouting hollow metal door frames.
- D. Fastening Adhesive for Wood and Steel: Special adhesive recommended for laminating gypsum panels to wood framing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Ceiling Anchorages: Coordinate installation of ceiling suspension systems with installation of overhead structural assemblies to ensure that inserts and other provisions for anchorages to building structure have been installed to receive ceiling hangers that will develop their full strength and at spacing required to support ceilings.

3.3 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
- B. Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

- D. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Avoid joints other than control joints at corners of framed openings where possible.
- E. Attach gypsum panels to wood studs/trusses so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- F. Attach gypsum panels to framing provided at openings and cutouts.
- G. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
 - 1. Space screws a maximum of 12 inches (304.8 mm) o.c. for vertical applications.

3.4 GYPSUM BOARD APPLICATION METHODS

- A. Single-Layer Application: Install gypsum wallboard panels as follows:
 - 1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistance-rated assemblies. Use maximum-length panels to minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of board.
- B. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
 - 1. Fasten with screws and glue.

3.5 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install corner bead at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed. Provide edge trim type with face flange formed to receive joint compound, except where other types are indicated.
 - 1. Install L-bead where edge trim can only be installed after gypsum panels are installed.
 - 2. Install aluminum trim and other accessories where indicated.
- D. Install control joints according to ASTM C 840 and manufacturer's recommendations, with a maximum spacing of 30', or as shown in specific locations by the Architect for visual effect.

3.6 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Treat gypsum board joints, interior angles, flanges of corner bead, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.

- B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
- C. Apply joint tape over gypsum board joints and to flanges of trim accessories as recommended by trim accessory manufacturer.
- D. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.
 - 1. Level 1 for ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
 - 2. Level 4 for gypsum board surfaces, unless otherwise indicated.
- E. Use the following joint compound combination as applicable to the finish levels specified:
 - 1. Embedding and First Coat: Ready-mixed, drying-type, all-purpose or taping compound. Fill (Second) Coat: Ready-mixed, drying-type, all-purpose or topping compound. Finish (Third) Coat: Ready-mixed, drying-type, all-purpose or topping compound.
- F. For Level 4 gypsum board finish, embed tape in joint compound and apply first, fill (second), and finish (third) coats of joint compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat as needed to produce a surface free of visual defects and ready for decoration.
- G. Where Level 1 gypsum board finish is indicated, embed tape in joint compound (above ceilings).

3.7 FIELD QUALITY CONTROL

- A. Above-Ceiling Observation: Architect will conduct an above-ceiling observation prior to installation of gypsum board ceilings and report any deficiencies in the Work observed. Do not proceed with installation of gypsum board to ceiling support framing until deficiencies have been corrected.
 - 1. Notify Architect one week in advance of the date and the time when the Project, or part of the Project, will be ready for an above-ceiling observation.

3.8 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.
- B. Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure gypsum board assemblies are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 092900

SECTION 096723 – RESINOUS FLOORING

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. This Section includes:
 - 1. High-performance resinous flooring systems.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Installer Certificates for Qualification: Signed by manufacturer stating that installers comply with specified requirements.
- C. Material Certificates: For each resinous flooring component, from manufacturer.
- D. Maintenance Data: For maintenance manuals.
- E. Samples: Submit two 6" X 6" samples of each resinous flooring system applied to a rigid backing. Provide sample which is a true representation of proposed field applied finish. Provide sample color and texture for approval from Owner in writing or approved by General Contractor prior to installation.
- F. Product Schedule: For resinous flooring.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of flooring systems required for this Project.
 - 1. Engage an installer who is approved in writing by resinous flooring manufacturer as qualified to apply resinous flooring systems indicated.
 - 2. Installer Letter of Qualification: Installer to provide letter stating that they have been in business for at least 5 years and listing 5 projects in the last 2 years of similar scope. For each project provide: project name, location, date of installation, contact information, size of project, and manufacturer of materials with system information.
- B. Source Limitations: Obtain primary resinous flooring materials, including primers, resins, hardening agents, grouting coats, and topcoats, from single source from single manufacturer. Provide secondary materials, including patching and fill material, joint sealant, and repair materials, of type and from source recommended by manufacturer of primary materials.
- C. Pre-installation Conference: Conduct conference at Project site before work and mockups begin.

- D. Mockups: Apply mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution. Do not cover up mockup area.
 - 1. Apply full-thickness mockups on 16 square foot floor area selected by Architect.
 - 2. Finish surfaces for verification of products, color, texture, and sheen.
 - 3. Simulate finished lighting conditions for Architect's review of mockups.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - 5. Mockup shall demonstrate desired slip resistance for review and approval by Owner's representative in writing.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage and mixing with other components.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with resinous flooring manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting resinous flooring application.
- B. Lighting: Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during resinous flooring application.
- C. Close spaces to traffic during resinous flooring application and for not less than 24 hours after application unless manufacturer recommends a longer period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by:
 - 1. The Sherwin Williams Company, Cleveland, OH. swflooring@sherwin.com
- B. Resuflor Deco Quartz BC23, 1/8" nominal thickness.
 - 1. Primer: Resuprime 3579 at 250 sq. ft. per gallon.
 - 2. 1st Receiver Coat: Resuflor 3561 at 140-145 sq. ft. per gallon
 - 3. 1st Broadcast: GP5900F to excess at 0.4 lbs. per sq. ft.
 - 4. 2nd Receiver Coat: Resuflor 3561 at 65-70 sq. ft. per gallon
 - 5. 2nd Broadcast: GP5900F to excess at 0.4 lbs. per sq. ft.
 - 6. Grout Coat: Resuflor 3746 at 100 sq. ft. per gallon.
 - 7. Topcoat: Resuflor 3746 at 200 sq. ft. per gallon.

2.2 MATERIALS

- A. VOC Content of Resinous Flooring: Provide resinous flooring systems, for use inside the weatherproofing system, that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24)].
 - 1. Resinous Flooring: 100 g/L.

2.3 HIGH-PERFORMANCE RESINOUS FLOORING

- A. Resinous Flooring: Abrasion-, impact- and chemical-resistant, high-performance, resin-based, monolithic floor surfacing designed to produce a seamless floor.
- B. System Characteristics:
 - 1. Color and Pattern: As indicated from manufacturers listed above.
 - 2. Slip Resistance: Provide slip resistant finish.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Inspection: Prior to commencing Work, thoroughly examine all underlying and adjoining work, surfaces and conditions upon which Work is in any way dependent for perfect results. Report all conditions which affect Work. No "waiver of responsibility" for incomplete, inadequate or defective underlaying and adjoining work, surfaces and conditions will be considered, unless notice of such unsatisfactory conditions has been filed and agreed to in writing before Work begins. Commencement of Work constitutes acceptance of surfaces.
- B. Surface Preparation: Remove all surface contamination, loose or weakly adherent particles, laitance, grease, oil, curing compounds, paint, dust and debris by blast track method or approved mechanical means (acid etch not allowed). If surface is questionable, try a test patch. Create a minimum surface profile for the system specified in accordance with the methods described in ICRI No. 03732 to achieve profile numbers as follows:
 - 1. Thin film, to 10 mils CSP-1 to CSP-3
 - 2. Thin and medium films, 10 to 40 mils CSP-3 to CSP-5
 - 3. Self-leveling mortars, to 3/16" CSP-4 to CSP-6
 - 4. Mortars and laminates, to 1/4" or more CSP-5 to CSP-10
- C. Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - 1. Moisture Testing: Perform tests indicated below.
 - a. Calcium Chloride Test: Perform anhydrous calcium chloride test per ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lbs. of water/1000 sq. ft. in 24 hours. Perform tests so that each test area does not exceed 1000 sq. ft. and perform 3 tests for the first 1000 sq. ft. and one additional test for every additional 1000 sq ft.
 - b. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative-humidity-level measurement.

3.2 ENVIRONMENTAL CONDITIONS

- A. All applicators and all other personnel in the area of the RF installation shall take all required and necessary safety precautions. All manufacturers' installation instructions shall be implicitly instructions shall be implicitly followed.
- B. Repair damaged and deteriorated concrete according to resinous flooring manufacturer's written instructions.
- C. Alkalinity and Adhesion Testing: Verify that concrete substrates have pH within acceptable range. Perform tests recommended by manufacturer. Proceed with application only after substrates pass testing.
- D. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.
- E. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.
- F. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.

3.3 APPLICATIONS

- A. Install resinous floor over properly prepared concrete surface in strict accordance with the manufacturer's directions.
 - 1. Install the primer and/or base coats over thoroughly cleaned and prepared concrete.
 - 2. Install topcoat over flooring after excess aggregate has been removed.
 - 3. Maintain a slab temperature of 60°F to 80°F for 24 hours minimum before applying floor topping, or as instructed by manufacturer.
- B. Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 - 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum intercoat adhesion.
 - 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 - 3. At substrate expansion and isolation joints, comply with resinous flooring manufacturer's written instructions.
- C. Sealant: Saw cut resinous floor topping at expansion joints in concrete slab. Fill sawcuts with sealant prior to final seal coat application. Follow manufacturer's written recommendations.
- D. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- E. Slip Resistant Finish: Provide grit for slip resistance.
- F. Apply topcoats in number indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.4 COMPLETED WORK

- A. Cleaning: Upon completion of the Work, clean up and remove from the premises surplus materials, tools, appliances, empty cans, cartons and rubbish resulting from the Work. Clean off all spattering and drippings, and all resulting stains.
- B. Protection: Protect Work in accordance with manufacturer's directions from damage and wear during the remainder of the construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.
- C. Contractor shall insure that coating is protected from any traffic until it is fully cured to the satisfaction of the coating manufacturer.

END OF SECTION 096723

SECTION 099110 – PAINTING

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. This Section includes surface preparation and field painting of the following:
 - 1. Exposed exterior items and surfaces.
 - 2. Exposed interior items and surfaces.
 - 4. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
- D. Related Sections include the following:
 - 1. Division 8 Section "Steel Doors and Frames" for shop priming steel doors and frames.
 - 2. Division 9 Section "Gypsum Board Assemblies" for surface preparation for gypsum board.

1.3 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
 - 1. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
 - 2. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 - 1. Product name or title of material.
 - 2. Product description (generic classification or binder type).
 - 3. Thinning instructions.
 - 4. Application instructions.
 - 5. Color name and number.
 - 6. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 - 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.6 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.
 - 1. Quantity: Furnish the Owner with an additional 1 gal. (3.785 L) of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers Names: The following manufacturer is used as a standard to establish level of quality required. Equal manufacturers are acceptable:
 - 1. Sherwin Williams or equal

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors: Match colors indicated by reference to manufacturer's color designations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.
 - 1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. Provide barrier coats over incompatible primers or remove and reprime.
 - 2. Cementitious Materials: Prepare concrete, concrete masonry block, and cement plaster surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 - a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.

- b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
 - 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and backsides of wood, including cabinets, counters, cases, and paneling.
 - c. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.
 - 4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.
 - a. Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC-SP 10.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.
 - 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
- 1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 - 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 - 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 - 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 - 3. Provide finish coats that are compatible with primers used.

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer on metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.
 3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.
- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.
- F. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- G. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
- H. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

- I. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.4 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.5 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.7 EXTERIOR PAINT SCHEDULE

- A. PVC Surfaces
 - 1. Primer/First Coat: Extreme Bond Primer
 - 2. Finish: 2 Coats Duration Exterior Satin)

3.8 INTERIOR PAINT SCHEDULE

- A. Concrete Masonry Units: (Walls)
 - 1. Primer: 1 Coat PrepRite Primer (CMU)
 - 2. Finish: 2 Coats Pro Industrial Waterbased Catalyzrd Epoxy Egshel
 - 3. Gloss or Sheen: Semi-Gloss
- B. Gypsum Drywall Systems: (Ceiling only)
 - 1. Finish Type: Latex
 - 2. Primer/First Coat: 1 Coat Multi-Prupopse InteriorExterior Latex Primer Sealer
 - 3. Finish: 2 Coats Pro Industrial Waterbased Catalyzed Epoxy Egshel
 - 4. Gloss or Sheen: Low Lustre
- C. Ferrous and Non-Ferrous Metal:
 - 1. Semi-Gloss Finish High Performance:
 - 2. Primer, 1 Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series
 - 3. Finish, 2 Coats: S-W Pro Industrial Acrylic Semi-Gloss, B66-650 Series.

END OF SECTION 099110

SECTION 102113.19 – PLASTIC TOILET COMPARTMENTS

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. This Section includes toilet compartments and screens as follows:
 - 1. Type: Solid-plastic, polymer resin.
 - 2. Compartment Style: Overhead braced and floor anchored.
- B. Related Sections include the following:
 - 1. Division 10 "Toilet and Bath Accessories" for toilet paper holders, grab bars, purse shelves, and similar accessories.

1.3 SUBMITTALS

- A. Product Data: For each type and style of toilet compartment and screen specified. Include details of construction relative to materials, fabrication, and installation. Include details of anchors, hardware, and fastenings.
- B. Shop Drawings: For fabrication and installation of toilet compartment and screen assemblies. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Show locations of reinforcement and cutouts for compartment-mounted toilet accessories.
- C. Samples for Initial Selection: Manufacturer's color charts consisting of sections of actual units showing the full range of colors, textures, and patterns available for each type of compartment or screen indicated.
- D. Samples for Verification: Of each compartment or screen color and finish required, prepared on 6-inch- (150-mm-) square Samples of same thickness and material indicated for Work.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating units without field measurements. Coordinate supports, adjacent construction, and fixture locations to ensure actual dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Santana Products, Inc
 - 2. Capitol Partitions, Inc.
 - 3. General Partitions Mfg. Corp.

2.2 MATERIALS

- A. General: Provide materials that have been selected for surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are unacceptable.
- B. Solid-Plastic, Polymer Resin: High-density polyethylene (HDPE) with homogenous color throughout. Provide material not less than 1 inch (25 mm) thick with seamless construction and eased edges in color and pattern as follows:
 - 1. Color and Pattern: One color and pattern in each room as selected by Architect from manufacturer's full range of colors and patterns.
- C. Pilaster Shoes and Sleeves (Caps): ASTM A 666, Type 302 or 304 stainless steel, not less than 0.0312 inch (0.8 mm) thick and 3 inches (75 mm) high, finished to match hardware.
 - 1. For solid-plastic, polymer-resin pilasters, in lieu of stainless-steel pilaster shoes and sleeves, manufacturer's standard plastic pilaster shoes and sleeves may be provided.
- D. Full-Height (Continuous) Brackets: Manufacturer's standard design for attaching panels and screens to walls and pilasters of the following material:
 - 1. Material: Clear-anodized aluminum.
- E. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories of the following material:
 - 1. Material: Stainless steel.
- F. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile in manufacturer's standard finish.
- G. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match hardware, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

2.3 FABRICATION

- A. General: Provide standard doors, panels, screens, and pilasters fabricated for compartment system. Provide units with cutouts and drilled holes to receive compartment-mounted hardware, accessories, and grab bars, as indicated.
- B. Solid-Plastic, Polymer-Resin Compartment, Screens: Provide aluminum heat-sink strips at exposed bottom edges of HDPE units to prevent burning.
- C. Overhead-Braced-and-Floor-Anchored Compartments: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions. Make provisions for setting and securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal supports and leveling mechanism.
- D. Doors: Unless otherwise indicated, provide 24-inch- (610-mm-) wide in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide out-swinging doors with a minimum 32-inch- (813-mm-) wide clear opening for compartments indicated to be handicapped accessible.
 - 1. Hinges: Manufacturer's standard self-closing type that can be adjusted to hold door open at any angle up to 90 degrees.
 - 2. Latch and Keeper: Manufacturer's standard surface-mounted latch unit with combination rubber-faced door strike and keeper designed for emergency access. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be handicapped accessible.
 - 3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.
 - 4. Door Bumper: Manufacturer's standard rubber-tipped bumpers at out-swinging doors or entrance screen doors.
 - 5. Door Pull: Manufacturer's standard unit that complies with accessibility requirements of authorities having jurisdiction at out-swinging doors. Provide units on both sides of doors at compartments indicated to be handicapped accessible.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, plumb, and level. Provide clearances of not more than 1/2 inch (13 mm) between pilasters and panels and not more than 1 inch (25 mm) between panels and walls. Secure units in position with manufacturer's recommended anchoring devices.
- B. Overhead-Braced-and-Floor-Anchored Compartments: Secure pilasters to floor and level, plumb, and tighten. Secure continuous head rail to each pilaster with not less than 2 fasteners. Hang doors and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

3.2 ADJUSTING AND CLEANING

- A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors and swing doors in entrance screens to return to fully closed position.

- B. Provide final protection and maintain conditions that ensure toilet compartments and screens are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 102113.19

SECTION 102800 - TOILET ACCESSORIES

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. This Section includes the following:
 - 1. Toilet accessories.
 - 2. Under-lavatory guards.
 - 3. Warm air hand dryers.
 - 4. Infant changing stations

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.
- B. Samples: For each accessory item to verify design, operation, and finish requirements.
 - 1. Approved full-size Samples will be returned and may be used in the Work.
- C. Setting Drawings: For cutouts required in other work; include templates, substrate preparation instructions, and directions for preparing cutouts and installing anchoring devices.
- D. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet and Bath Accessory Schedule and room designations indicated on Drawings in product schedule.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Architect.
- B. Product Options: Accessory requirements, including those for materials, finishes, dimensions, capacities, and performance, are established by specific products indicated in the Toilet and Bath Accessory Schedule.
 - 1. Products of other manufacturers with equal characteristics, as judged solely by Architect, may be provided.

1.5 COORDINATION

- C. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.
- D. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.6 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.
 - 1. Minimum Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide accessories by one of the following:
 - 1. Toilet Accessories:
 - a. American Specialties, Inc.
 - b. Bobrick Washroom Equipment, Inc.
 - c. Bradley Corporation.
 - 2. Under-lavatory Guards:
 - a. Brocar Products, Inc.
 - b. Truebro, Inc.
- B. Available Products: Subject to compliance with requirements, products that may be incorporated into the work include, but are not limited to, those indicated in the Toilet and Bath Accessory Schedule at the end of Part 3.

2.2 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, with No. 4 finish (satin), in 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.
- B. Brass: ASTM B 19, leaded and unleaded flat products; ASTM B 16 (ASTM B 16M), rods, shapes, forgings, and flat products with finished edges; ASTM B 30, castings.
- C. Sheet Steel: ASTM A 366/A 366M, cold rolled, commercial quality, 0.0359-inch (0.9-mm) minimum nominal thickness; surface preparation and metal pretreatment as required for applied finish.
- D. Galvanized Steel Sheet: ASTM A 653/A 653M, G60 (Z180).

- E. Chromium Plating: ASTM B 456, Service Condition Number SC 2 (moderate service), nickel plus chromium electrodeposited on base metal.
- F. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.
- G. Mirror Glass: ASTM C 1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.
- H. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- I. Fasteners: Screws, bolts, and other devices of same material as accessory unit, tamper and theft resistant when exposed, and of galvanized steel when concealed.

2.3 FABRICATION

- A. General: One, maximum 1-1/2-inch- (38-mm-) diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of accessories. On interior surface not exposed to view or back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.
- B. General: Names or labels are not permitted on exposed faces of accessories. On interior surface not exposed to view or on back surface of each accessory, provide printed, waterproof label or stamped nameplate indicating manufacturer's name and product model number.
- C. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.
- D. Recessed Toilet Accessories: Unless otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless-steel hinge. Provide anchorage that is fully concealed when unit is closed.
- E. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.
 - 1. Provide galvanized steel backing sheet, not less than 0.034 inch (0.85 mm) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.
- F. Mirror-Unit Hangers: Provide mirror-unit mounting system that permits rigid, tamper- and theft-resistant installation, as follows:
 - 1. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
 - 2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- G. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.
- C. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

3.3 TOILET ACCESSORY SCHEDULE: .

- A. Toilet Tissue Dispenser:
 - 1. Bobrick, Model B-7686
 - 2. Surface mounted in each stall.
- B. Grab Bars: Provide stainless-steel grab bar complying with the following:
 - 1. Products: Provide the following:
 - 2. Stainless-Steel
 - a. Reference Product: B-6806 Series by Bobrick
 - b. Sizes as indicated on the plans.
 - 3. Mounting: Concealed with manufacturer's standard flanges and anchors.
 - 4. Gripping Surfaces: Smooth, satin finish.
 - 5. Outside Diameter: 1-1/2 inches (38 mm) for heavy-duty applications.
- C. Mirror Unit: Provide the following:
 - 1. Products: Provide the following for the public toilet room:
 - 2. Stainless-Steel, Channel-Framed Mirror:
 - a. Reference Products: B-292 by Bobrick.
 - b. Size to be 18" x 30" or as indicated.
- D. Under-lavatory Guard: Provide under-lavatory guard complying with the following:

1. Products: Provide the following for the public toilet rooms and the handicapped accessible units:
2. Insulating Piping Coverings: White, antimicrobial, molded-vinyl covering for supply and drain piping assemblies intended for use at accessible lavatories. Provide components as required for applications indicated with flip tops at valves that allow service access without removing coverings.
 - a. Reference Product: Model 103 Lav-Guard by TrueBro Inc.

E. Warm Air Hand Dryers:

1. Hand Dryer: Warm air, rapid drying, energy efficient electric hand dryer; XLERATOR; surface mounted; entire dryer internally grounded.
 - a. Warranty Period: 5 years; limited warranty.
 - b. MADE IN USA Certified.
 - c. Controls: Automatic, activated by infrared optical sensor. Operates while hands are under blower. Shut-off within 2 seconds when hands removed, or in 35 seconds if hands not removed.
 - d. Cover: Stainless steel with brushed finish.
 - e. ADA: ADA XChanger Combo Kit: Comes with ADA Recess Kit #40502 and ADA Height XChanger #40551
 - f. Air Intake: Inlet openings on bottom of cover.
 - g. Air Outlet: Delivers focused air stream at average hand position of 4 inches (102 mm) below air outlet.
 - h. Noise Reduction Nozzle: 1.1 noise reduction nozzle.
 - i. Wall Plate: Injection molded, rib reinforced plate with metal L brackets to attach cover, with ten 5/16 inch (8 mm) diameter holes for surface mounting to wall and three 7/8 inch (22 mm) diameter holes for electrical wiring; bottom hole suitable for surface conduit.
 - j. Nominal Size: 11-3/4 inches (298 mm) wide by 12-11/16 inches (322 mm) high by 6-11/16 inches (170 mm) deep.
 - k. Weight:
 - 1) 15 pounds (6.8 kg) stainless cover.
 - l. Power Source: 110/120 volt, 12.5 amp, 60 Hz
 - m. Combination Motor and Blower: Series commutated, through-flow discharge, vacuum type; 5/8 HP, 20,000 RPM. Air flow rate: 19,000 linear feet per minute (97 meters per second) at air outlet, 16,000 linear feet per minute (81 meters per second) at average hand position of 4 inches (102 mm) below air outlet.
 - n. Heater: Nichrome wire element, mounted inside blower housing to be vandal proof.
 - o. Heater Safeguard: Automatic resetting thermostat to open when air flow is restricted and close when air flow is resumed.
 - p. Air Temperature: 135 degrees F (55 degrees C) measured at average hand position of 4 inches (102 mm) below air outlet. Air Heater Output: 900 watts.
 - q. All metal parts coated according to Underwriters Laboratories, Inc. requirements.
 - r. Mount at the following heights above floor surface:
 - 1) Toilets for Persons with Physical Disabilities: 37 inches (940 mm).

F. Infant Changing Station

1. Provide and install an infant change station in each restroom as shown, unit to be as follows:
 - a. Model KB200 as manufactured by Koala Kare, Division of Bobrick.
 - b. Units to be wall mounted, one in each room, height to conform to ADA standards.

END OF SECTION 102800

SECTION 311000 - SITE CLEARING

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. This Section includes the following:

1. Protecting existing trees and vegetation to remain.
2. Removing trees and other vegetation.
3. Clearing and grubbing.
4. Topsoil stripping.
5. Removing above-grade site improvements.
6. Disconnecting, capping or sealing, and abandoning site utilities in place.
7. Disconnecting, capping or sealing, and removing site utilities.

- B. Related Sections include the following:

1. Division 1 Section "Field Engineering" for verifying utility locations and for recording field measurements.
2. Division 1 Section "Construction Facilities and Temporary Controls" for temporary utilities, temporary construction and support facilities, temporary security and protection facilities, and environmental protection measures during site operations.
3. Division 2 Section "Tree Protection and Trimming" for protecting trees remaining on-site that are affected by site operations.
4. Division 2 Section "Earthwork" for soil materials, excavating, backfilling, and site grading.
5. Division 2 Section "Landscaping" for finish grading, including placing and preparing topsoil for lawns and planting.

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of weeds, roots, and other deleterious materials.

1.4 MATERIALS OWNERSHIP

- A. Except for materials indicated to be stockpiled or to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from the site.

1.5 SUBMITTALS

- A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
- B. Record drawings according to Division 1 Section "Contract Closeout."
 - 1. Identify and accurately locate capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."

1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing indicated removal and alteration work on property adjoining Owner's property will be obtained by Owner before award of Contract.
- C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- D. Notify utility locator service for area where Project is located before site clearing.

PART 2 - PRODUCTS (Not Applicable)

2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 2 Section "Earthwork."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.

- B. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Locate and clearly flag trees and vegetation to remain or to be relocated.
- D. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TREE PROTECTION

- A. Erect and maintain a temporary fence around drip line of individual trees or around perimeter drip line of groups of trees to remain. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within drip line of remaining trees.
 - 2. Do not permit vehicles, equipment, or foot traffic within drip line of remaining trees.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of trees, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
 - 3. Coat cut faces of roots more than 1-1/2 inches (38 mm) in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 4. Cover exposed roots with wet burlap to prevent roots from drying out. Backfill with soil as soon as possible.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.
 - 1. Employ a qualified arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by the qualified arborist.

3.3 UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 - 1. Owner will arrange to shut off indicated utilities when requested by Contractor.
 - 2. Arrange to shut off indicated utilities with utility companies.

- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect not less than two days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Architect's written permission.
- D. Excavate for and remove underground utilities indicated to be removed.
- E. Removal of underground utilities is included in Division 15 mechanical or Division 16 electrical Sections.

3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction. Removal includes digging out stumps and obstructions and grubbing roots.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Completely remove stumps, roots, obstructions, and debris extending to a depth of 18 inches (450 mm) below exposed subgrade.
 - 4. Use only hand methods for grubbing within drip line of remaining trees.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding 8-inch (200-mm) loose depth, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Strip surface soil of unsuitable topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
 - 2. Do not stockpile topsoil within drip line of remaining trees.
 - 3. Dispose of excess topsoil as specified for waste material disposal.
 - 4. Stockpile surplus topsoil and allow for respreading deeper topsoil.

3.6 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 - 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

3.7 DISPOSAL

- A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 311000

SECTION 312000 - EARTHWORK

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. This Section includes the following:

1. Excavating and backfilling for buildings and structures.
2. Drainage course for slabs-on-grade.
3. Excavating and backfilling trenches within building lines.

Note: All grading and paving outside of building lines to be completed by Site Contractor under separate contract. Site Contractor is also responsible for preparing and compacting building pad to subgrade elevation.

- B. Related Sections include the following:

1. Division 3 Section "Cast-in-Place Concrete" for granular course over vapor retarder.
2. Division 15 and 16 Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 DEFINITIONS

- A. Backfill: Soil materials used to fill an excavation.
- B. Drainage Course: Layer supporting slab-on-grade used to minimize capillary flow of pore water.
- C. Structures: Buildings, footings, foundations, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- D. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- E. Utilities include on-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 1. Classification according to ASTM D 2487 of each on-site or borrow soil material proposed for backfill.

1.5 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Backfill and Fill: Satisfactory soil materials.
- D. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch (38-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.3 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.

- B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

3.4 APPROVAL OF SUBGRADE

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

3.5 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.

3.6 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 1. Construction below finish grade including, where applicable, perimeter insulation.
 2. Surveying locations of underground utilities for record documents.
 3. Inspecting and testing underground utilities.
 4. Removing trash and debris.

3.7 UTILITY TRENCH BACKFILL

- A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- B. Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings; fill with concrete to elevation of bottom of footings.
- C. Coordinate backfilling with utilities testing.
- D. Place and compact final backfill of satisfactory soil material to final subgrade.

3.8 FILL

- A. Place and compact fill material in layers to required elevations as follows:

1. Under building slabs, use engineered fill.

3.9 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 1. Under building slabs, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill material at 95 percent.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.10 DRAINAGE COURSE

- A. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:
 1. Compact drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.
 2. When compacted thickness of drainage course is 6 inches (150 mm) or less, place materials in a single layer.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 1. Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 3000 sq. ft. (186 sq. m) or less of building slab, but in no case fewer than three tests.
 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 200 feet (30 m) or less of wall length, but no fewer than two tests.
 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet (46 m) or less of trench length, but no fewer than two tests.

- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.12 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 312000

SECTION 313116 - TERMITE CONTROL

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. This Section includes the following for termite control:
 - 1. Soil treatment.

1.3 DEFINITIONS

- A. PCO: Pest control operator.

1.4 SUBMITTALS

- A. Product Data: Treatments and application instructions, including EPA-Registered Label.
- B. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements.
- C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:
 - 1. Date and time of application.
 - 2. Moisture content of soil before application.
 - 3. Brand name and manufacturer of termiticide.
 - 4. Quantity of undiluted termiticide used.
 - 5. Dilutions, methods, volumes, and rates of application used.
 - 6. Areas of application.
 - 7. Water source for application.
- E. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is experienced and has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.

- B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.7 COORDINATION

- A. Coordinate soil treatment application with excavating, filling, and grading and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

1.8 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.
- C. Warranty Period: Five years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

- A. Continuing Service: Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Owner, in the form of a standard yearly (or other period) continuing service agreement, starting on the date of Substantial Completion. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

- A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
- B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.
2. Bayer Corp.; Garden & Professional Care.
3. Dow AGRO Science.
4. FMC Corp.; Pest Control Specialties.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.
- B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.
- C. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.3 APPLICATION, GENERAL

- A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.4 APPLYING SOIL TREATMENT

- A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.
 1. Slabs-on-Grade: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
 2. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.

- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
- C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
- D. Post warning signs in areas of application.
- E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION 313116

BATHROOMS AT FASOLA PARK AND THE DEPTFORD MUSEUM

**TOWNSHIP OF DEPTFORD,
GLOUCESTER COUNTY, NEW JERSEY**

TECHNICAL SPECIFICATIONS

Section 1000	Site Work General Requirements	1000-1 to 1000-12
Section G1010	Site Clearing	G1010-1 to G1010-3
Section G1030	Site Earthwork	G1030-1 to G1030-10
Section 02770	Concrete Walks, Curbs, Gutters & Structures	02770-1 to 02770-3
Section 02530	Sanitary Sewer	02530-1 to 02530-7
Section 02531	Duplex Grinder Pump Stations	02531-1 to 02531-9
Section 02511	Water Mains	02511-1 to 02511-9

SECTION 1000 – SITE WORK GENERAL REQUIREMENTS

1000.1 SCOPE OF WORK

The intent of the Contract is for the Contractor to construct the Work to be functionally complete and aesthetically acceptable. Perform work that may be reasonably inferred from the Contract as being required to produce the intended result under the Items of the Contract. Perform the Work using the best construction practices and provide materials and workmanship of the first quality to meet the Contract requirements.

The site work for this project includes but is not limited to the complete construction of potable water infrastructure, sanitary sewer infrastructure, storm sewer infrastructure, site grading, concrete sidewalks, site lighting, landscaping, site sediment and erosion controls, and building utility services as shown on the site plans and details and as described in these specifications.

Should any discrepancies arise between Deptford Township Municipal Utilities Authority (DTMUA) Rules and Regulations and the Specifications herein, the DTMUA Rules and Regulations shall govern.

Nothing in the site plans or details shall be understood to supersede any current code requirements. All utility infrastructure shall comply with the applicable National Codes and the applicable New Jersey Building Code and Subcodes.

All work shall be coordinated with the architectural, electrical, mechanical and other plans issued with the contract documents. Discrepancies or conflicts between any plans or directions and the site plans shall be brought to the attention of the CONSTRUCTION MANAGER prior to performing work in either the building or site areas.

In all cases, walks leading to building egress or entrance points as well as road and driveway crossings shall be in compliance with the 2010 ADA guidelines. Where necessary the contractor shall adjust the layout, with approval of the CONSTRUCTION MANAGER, to ensure that ADA compliance is achieved.

All quantities indicated on the Civil Drawings are approximate estimates intended to convey a general size of the work and the various significant site work items that the project requires. The contractor shall extend the various site work items as needed to construct a smooth, aesthetically pleasing and functional joint and transition from existing to new construction.

The contractor agrees, without exception, that the quantities shown in the drawings are approximate estimates and not guaranteed, that he has measured and calculated on his own what is needed for the completed project, that the project is a Lump Sum Bid and that he has prepared and submitted his bid accordingly and understands that no additional compensation above his bid shall be requested or provided for the Work should he be awarded the Contract.

The exact saw cut location, and location at which new sidewalks will be joined with existing sidewalks will be determined in the field in consultation with the CONSTRUCTION MANAGER. Adjustments shall be made to include replacements of curbs and pavement that may be found to be damaged adjacent to the general location shown on the plans. Sidewalks shall be removed to existing joint locations. Remainders less than 4 feet for walks shall not be acceptable.

Bathrooms at Fasola Park and the Deptford Museum

The Contractor shall comply with all relevant sections of the NJDOT 2019 Standard Specifications for Road and Bridge Construction, regarding site work, earthwork, backfill materials, concrete, storm drains, sidewalks, utilities, landscaping, signage, striping, traffic control, etc.

1000.2 WORKING DRAWINGS

When working drawings are specified, the Contractor shall submit methods of construction, material designations, design calculations, catalogue cuts, illustrations, schedules, performance charts, brochures, and other information necessary to construct the work as specified in the Contract. The Contractor shall not submit working drawings that are repetitious or duplicative of items specified or detailed within the Contract or that change the Plans or Specifications.

Ensure that working drawing submissions also conform to NJDOT design manuals and other related standards for the proposed work. Ensure that working drawings are signed and sealed by a Professional Engineer. After Award, the OWNER / CONSTRUCTION MANAGER will provide additional formatting information, the number of copies required, and the designated design unit to which the Contractor shall submit working drawings.

The Contractor shall review, sign, and submit working drawings in an orderly sequence so as not to delay the Work, or the work performed by others. By submitting working drawings for review and approval, the Contractor certifies that it has verified all field measurements and that all dimensions shown conform to the Contract. The Contractor further certifies that catalog numbers, field construction criteria, materials, and other criteria have been coordinated with the requirements of the Contract and the Work for each submitted working drawing. The certification or approval of working drawings does not constitute an approval of any materials noted.

The OWNER's (or OWNER's REPRESENTATIVE) certification or approval of working drawings signifies only that the drawings are in general conformance with the Contract. The OWNER's (or OWNER's REPRESENTATIVE) certification or approval of working drawings does not relieve the Contractor from responsibility for errors and omissions in the working drawings and their correction.

The Contractor shall submit working drawings for certification or approval as called for on the drawings and in these specifications.

1000.3 COORDINATION WITH UTILITIES

The Contractor is responsible for coordinating work performed by Utility Purveyors, and is responsible for delays and costs resulting from failure to coordinate. The Contractor shall provide a written request to each Utility Purveyor in the time specified for the advance notice requirements specified in the Special Provisions. Requests shall include the following:

1. Name and location of the Project.
2. Name and contact information of the Contractor and Superintendent.
3. Portion of the approved preliminary schedule or baseline schedule that affects the Utility in question.

Bathrooms at Fasola Park and the Deptford Museum

4. Provide a copy of the notice and response to the OWNER or their REPRESENTATIVE.

Where Utility Purveyors jointly use poles or duct banks, the Utility Purveyors are to perform the work sequentially.

The Contractor shall ensure that the work site is in a condition that allows the Utility Purveyor to perform its work at the scheduled time. If the Contractor fails to provide the work site at the scheduled time, the Contractor is responsible for the resulting delays and costs to the Project. If the Contractor causes the Utility Purveyor to incur additional costs, or delays the Utility without prior written approval of the OWNER or their REPRESENTATIVE, the Contractor is responsible for these costs and delays. The OWNER has the right to recover the cost of damages from the Contractor.

The Contractor shall immediately notify the OWNER or their REPRESENTATIVE of failure by the Utility Purveyor to respond or complete its work as specified in the Special Provisions.

1000.4 MATERIALS CERTIFICATIONS

The Owner or Owner's Representative will accept materials, as specified, on the basis of Certificates of Compliance stating that the materials or assemblies fully comply with the requirements of the Contract.

The Owner or Owner's Representative has the right to sample and test materials or assemblies accepted on the basis of Certificates of Compliance at any time. The Department will reject materials or assemblies, whether in place or not, if found not to be in conformance with the Contract requirements.

Ensure that four (4) copies of the manufacturer's Certificates of Compliance are provided with each delivery of materials, components, and manufactured items that are accepted by certification. Retain one (1) copy and submit three (3) copies to the CONSTRUCTION MANAGER. With the Certificate of Compliance, provide a transmittal identifying the Item for which it is submitted. Ensure that Certificates of Compliance contain the following information:

1. Project Name.
2. Name of the Prime Contractor.
3. Material description.
4. Quantity of material represented by the certificate.
5. Means of identifying the consignment, such as label marking and seal number.
6. Date and method of shipment.
7. A statement that the material conforms to the Contract material requirements and that REPRESENTATIVE samples have been sampled and tested.
8. If the submission is for an assembly of materials, a statement that the assembly conforms to the Contract.
9. Signature of a person having legal authority to bind the supplier.

Bathrooms at Fasola Park and the Deptford Museum

10. Signature attested to by a notary public or other properly authorized person.

The Department will not make payment for work for which material is accepted on the basis of a Certificate of Compliance until the CONSTRUCTION MANAGER has received the required Certificate of Compliance and inspected and accepted the material or assembly.

1000.5 PROHIBITED ACTIVITIES

Prohibited construction procedures for all parts of the work include, but are not limited to the following:

1. Dumping of spoil material into any stream corridor, any wetlands, any surface waters, or at unspecified locations.
2. Indiscriminate, arbitrary, or capricious operation of equipment in any stream corridors, any wetlands, or any surface waters.
3. Pumping of silt-laden water from trenches or other excavations into any surface waters, any stream corridors, or any wetlands.
4. Damaging vegetation adjacent to or outside of the access road or right-of-way.
5. Disposal of trees, brush, and other debris in any stream corridors, any wetlands, any surface waters, or at unspecified locations.
6. Open burning of debris.
7. Applying any pesticides, including defoliants, desiccants, and plant regulators, in any wetlands containing significant stands of high vigor *Spartina Alterniflora* (Saltmarsh Cordgrass), *Zizania Aquatica* (Wildrice), *Typha SP* (Cattail), and *Scirpus Americanus* (Common Threesquare).
8. Applying pesticides whose residues and metabolic products persist in the environment over extended periods of time.
9. Any work that allows silica sand or other dust particles to be airborne or to otherwise be tracked or moved off of the site into areas of pedestrian or other college activities.

1000.6 PROTECTION OF EXISTING PROPERTY

PART 1 – GENERAL

1.01 Work Included

Requirements for protecting existing public and private property at or in vicinity of the Work Site.

CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to all public and private property not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall protect the natural vegetation and other existing landscape features

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and surroundings. Damages to tree trunks, limbs, bark and roots shall be repaired using acceptable tree surgeon methods.

All grass areas beyond the construction limits damaged by the CONTRACTOR shall be repaired using seeding methods and materials equal to or better than that existing prior to construction.

Where damage or injury or loss is done to public or private property as a result of the CONTRACTOR's execution of the work, such property shall be restored by the CONTRACTOR at his expense to a condition equal to that existing prior to the damage.

Survey markers removed or disturbed by the CONTRACTOR'S operations shall be reset by a licensed professional land surveyor registered in the State of New Jersey.

1.04 Submittals

CONTRACTOR will submit to the CONSTRUCTION MANAGER lists of damages to property that exist prior to construction or construction related activity. The lists shall include the following information:

1. Location of damage by station or address
2. Nature of damage
3. Extent of damage
4. Still photograph of the damage showing surrounding area for reference.
5. Still photograph of the damage showing close up dimensions and/or details.

1000.7 TRAFFIC CONTROLS

PART 1 – GENERAL

1.01 Scope of Work

ALL CONSTRUCTION TRAFFIC MUST ENTER AND EXIT SITE VIA THE EXISTING ROAD ACCESS, SYCAMORE LANE (FASOLA PARK) AND ANDALORO WAY (THE DEPTFORD MUSEUM).

The contractor shall construct temporary latex stripes within the designated parking area and shall erect approved directional signs to alert construction drivers and the student body where the construction vehicles are to go within the lot. All contractor personnel and work vehicles shall park only within designated areas.

The contractor shall also erect temporary fencing barricades or other measures as and whenever needed around loading/unloading areas while such work is actively being performed. Sidewalks along the front of the laydown areas shall remain open except during brief periods of loading and unloading.

The contractor shall obtain approval from the CONSTRUCTION MANAGER for each and every closure of the sidewalk and any part of a parking lot at least 48 hours prior to erecting the closure devices.

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If closures of the walk or parking areas are approved and may extend into busy pedestrian periods, the Contractor shall construct a bypass pedestrian corridor of barricades or temporary construction fencing, which shall keep vehicles and pedestrians safe, separated and shall connect the existing walk from one side of the work to the other.

This work includes the maintenance and protection of both vehicular and pedestrian traffic within and adjacent to the area of the Project so that both can safely and conveniently traverse around the work area from one area of the campus to another.

CONTRACTOR shall furnish and install all traffic barricades, markers, and signs, provide flagmen, and other facilities required by the Federal, State and local government authorities and the ENGINEER to protect general public and maintain the existing roads, streets and highways. Any work performed as part of this contract that will interfere with the efficient flow of traffic must have certified flagmen on site.

The CONTRACTOR shall notify the College and request approval for any desired limitations to the existing traffic patterns.

The OWNER or ENGINEER make no warranty or representation that the CONTRACTOR will be permitted to divert or barricade traffic and the CONTRACTOR shall be fully responsible to complete all obligations of the Contract regardless of any restrictions which may be imposed by Federal, State or local authorities.

1.02 Maintaining Traffic

A. Traffic Diversion

Traffic diversion is not permitted for this project.

B. One-Way Traffic

Whenever one-way traffic is established, at least two (2) flagmen shall be provided.

C. Pedestrian Traffic

Pedestrian access to all of the College walkways and parking lots must be maintained at all times.

1.03 Traffic Signs

The installation and operation of traffic control signage shall conform to the requirements of Federal, State, and local government highway departments.

Signs not in use must be bagged, removed or positioned in such a manner so as not to be seen by motorists.

All signs that are no longer actively in use should be removed or covered with burlap immediately.

PART 2 – PRODUCTS

Maintenance and protection of traffic for this Project shall conform to the most current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways and its latest editions and addenda, hereinafter referred to as the MUTCD, NJDOT 2019 Standard Specifications for Road and Bridge Construction, as amended, and all other warning signs and maintenance of barricades, traffic cones and drums shall be in strict conformance with

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N.J.D.O.T. Standard Specifications.

PART 3 – EXECUTION

Within 10 days after notice to the Contractor of the award of the Contract, he shall submit, in writing for the approval of the Construction Manager a plan of the methods, traffic corridors, facilities and devices he proposes for use for the maintenance and protection of traffic.

Signs, barricades, traffic cones, shall be established, relocated, repaired and replaced in such manner and at such times and places as may be necessary for adequate protection of vehicular and pedestrian traffic, subject to the approval of the Construction Manger or Engineer. The Contractor shall provide sufficient flagmen and shall take all other precautions including any which may be order by the Construction Manager or Engineer, that are necessary for the safety of the public and protection of traffic and work. Patrols shall be made on a regular basis to assure that all maintenance devices and warning signs are in a working condition and have a clean appearance.

ADA compliant access must be maintained at all times along the existing and temporary pedestrian paths. The Contractor will not be permitted to completely shutdown a pedestrian path at any time. The Contractor shall stage his or her construction operations in order to allow for constant ADA compliant access to all of the College paths. The plan for maintaining pedestrian traffic must be approved by the OWNER and the College Security Department.

The means provided for the maintenance of traffic shall be removed upon completion of each portion of the project and all damage done to the adjacent property shall be repaired by the Contractor at their own expense.

1000.8 MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.01 Protection of Materials & Equipment

The CONTRACTOR shall be responsible for the safe storage of all material furnished to or by them until it has been incorporated in the completed project and accepted by the CONSTRUCTION MANAGER. The CONTRACTOR shall bear the risk of loss and/or damage to the materials and Work until the Work is finally accepted by the CONSTRUCTION MANAGER.

All electrical and mechanical equipment shall be stored in a warm, dry shelter with proper ventilation. Under no circumstances shall motors, electrical control equipment or any other electrical or mechanical equipment be stored under polyethylene plastic covers or tarpaulins. When space is available inside existing structures, and the OWNER approves, the CONTRACTOR will be allowed to store equipment inside them. Should such space not be available, the CONTRACTOR shall construct a shelter with a source of heat and proper ventilation as approved by the CONSTRUCTION MANAGER for the storage of equipment.

PART 2 – PRODUCTS

Unless otherwise specifically provided for in these specifications, all equipment, materials and articles incorporated in the Work shall be new, in current production and the best grade obtainable consistent with general construction usage.

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Materials specified by reference to the number or symbol of a specific standard, such as a Commercial Standard, Federal Specification or other similar standard, shall comply with the supplement in effect on the date of the Specifications, except as limited to type, class or grade, or modified by these Specifications.

The CONTRACTOR shall submit to CONSTRUCTION MANAGER samples of materials for approval when requested and/or directed.

PART 3 – EXECUTION

The CONTRACTOR shall verify and make necessary corrections to construction dimensions for all specified materials to be installed and function within the intent of the Contract Drawings and Specifications. The CONTRACTOR will promptly notify the CONSTRUCTION MANAGER of all necessary corrections required.

All material, equipment, fixtures and devices furnished shall comply with the requirements and standards of all Federal, State and local laws, ordinances, and codes governing safety and health.

When received from the Carrier and at time of unloading, the CONTRACTOR shall inspect all materials and accessories for loss or damage. The CONTRACTOR shall accept no shipment of material unless the Carrier's agent has described loss or damage on the Bill of Lading. Any discrepancies between the Bill of Lading and the physical material shall be noted on the Bill of Lading. All demurrage charges on carloads or truckloads of pipe or other material shall be paid by the CONTRACTOR.

The CONTRACTOR shall be responsible for all material furnished by him. The CONTRACTOR at his expense shall replace all such material that is defective in manufacture or has been damaged in transit or after delivery.

The CONTRACTOR's responsibility for material furnished by the OWNER shall begin upon CONTRACTOR's acceptance at the point of delivery to him. All such material shall be examined, and material defective in manufacture and/or otherwise damaged shall be rejected by the CONTRACTOR at the time and place of delivery to him and replaced by the OWNER. Once accepted by the CONTRACTOR, at the point of delivery to him, all defective and/or damaged material discovered prior to final acceptance of the Work shall be removed by the CONTRACTOR and he shall install, at his own expense, the material replaced. In such case the CONTRACTOR shall furnish all labor, equipment and material incidental to replacement and necessary for the completion of the Work to the satisfaction of the CONSTRUCTION MANAGER. The CONTRACTOR will be reimbursed for the cost of replacing defective materials furnished by the OWNER and accepted by the CONTRACTOR if, but only if, the CONTRACTOR submits proof satisfactory to the CONSTRUCTION MANAGER and to the manufacturer and/or supplier from whom the OWNER purchased the material that the defect was latent and could not have been discovered by the CONTRACTOR.

The CONTRACTOR shall be responsible for unloading, stringing and/or storing all materials delivered to the job site. In addition, the CONTRACTOR shall inspect the delivered materials as specified in Section 200.06.3.03.

The CONTRACTOR may utilize a fenced in area for storage of materials or opt to install a temporary protected staging area elsewhere.

1000.9 TESTING

PART 1 - GENERAL

The CONSTRUCTION MANAGER shall be responsible for testing all materials constructed on site. A geotechnical testing lab and or Geotechnical engineer will be retained to perform soils testing and asphalt testing upon request of the Construction manager.

The contractor shall schedule and coordinate all work in advance with the CONSTRUCTION MANAGER to facilitate the on-site testing and re-testing where needed. Coordination shall include but not be limited to providing safe & timely access to the work area, control reference points, survey and access equipment, and appropriate safe locations on site for storage of samples.

Concrete samples shall be taken and prepared for testing. Concrete samples shall be stored on site in a manner identical to the conditions of the concrete that the samples represent.

Manufactured items, e.g. pipe, conduit, precast concrete, castings, lights, irrigation components etc., shall be tested by the manufacturer and shall be certified to comply with these specifications, applicable standards and the submitted shop or working drawings and materials submittals.

The OWNER reserves the right to test any manufactured materials for conformance at its expense either before, during or after incorporation in the work. Costs for all testing shall be back charged to the Contractor for any materials found to be not conforming.

1.02 Pipelines

All pipelines, valves, appurtenances, etc. installed per these Contract Documents shall be tested in the manner described by the technical specifications and as required by the Utility Authority. Unless otherwise stated, all pipelines shall be hydrostatically tested, with no leakage, at a pressure at least equal to the maximum operating pressure of the pipeline.

1.03 Performance Tests

A. General

1. The CONTRACTOR shall assist the CONSTRUCTION MANAGER and Utilities Representatives in the performance of all tests as may be required by the Specifications, the Authority having jurisdiction, or necessary for activation of the system. All operations and coordination of the tests from the beginning to their satisfactory completion as determined by the OWNER and CONSTRUCTION MANAGER shall be the complete responsibility of the CONTRACTOR.
2. The general sequencing of the testing shall be included in the Contractors Schedule. The CONTRACTOR shall give the OWNER at least 14 days written notice prior to the commencement of mechanical performance tests and start-up.

PART 2 – PRODUCTS

All testing devices and equipment shall be new, and shall be calibrated as per manufacturer's requirements. Records of calibration shall be provided to the CONSTRUCTION MANAGER prior to testing and upon request.

1000.10 PROJECT CLOSEOUT

PART 1 – GENERAL

Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for CONSTRUCTION MANAGER'S inspection. Provide submittals to CONSTRUCTION MANAGER that are required by governing or other authorities. Submit application for final payment identifying total adjusted Contract sum, previous payments, and sum remaining due.

1.03 Final Cleaning

Execute final cleaning prior to final inspection. Clean all storm pipes and sanitary sewer pipe lines, gutters, storm inlets and all exposed areas of site improvements.

Verify that the sand layer and underlying soils are compacted only to the extent that the required permeability is achieved. If compaction is excessive, remove the sand, rework the basin bottom accordingly, and replace the sand without reducing the permeability of the underlying soils.

Clean site, sweep paved areas, rake clean landscape surfaces. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.04 Project Record Documents

Maintain on site, one set of the following record documents; record actual revisions to the Work:

1. Contract drawings
2. Specifications
3. Addenda
4. Change orders and other modifications to the Contract
5. Reviewed shop drawings, product data, and samples.

Store record documents separate from documents used for construction. Record information concurrent with construction progress.

Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer's name and product model and number
2. Product substitutions or alternates utilized
3. Changes made by addenda and modifications

Record Documents and Shop Drawings. Legibly mark each item to record actual construction including:

1. Measured depths of foundations in relation to finish floor datum.

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2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract Drawings.

Submit documents to ENGINEER with final Application for Payment.

1.05 SPARE PARTS & MAINTENANCE MATERIALS

Provide products, spare parts, maintenance and operation manuals, and extra materials in quantities specified in individual specification sections.

1000.11 SOIL EROSION AND SEDIMENTATION CONTROL

PART 1 – GENERAL

1.01 Scope of Work

Work to be performed under this Section refers to temporary and permanent vegetation covers, mulching and baling at the construction site and all areas disturbed during construction, including borrow areas. In addition to the requirements of these Specifications, the CONTRACTOR will comply with all local Conservation District laws, rules and regulations and all other Federal, State, and local requirements for erosion and sediment control.

The College has no control of the Soil Conservation District or its inspectors. The measures shown in the contract plans have been reviewed and approved by the District, and the District reserves the right to direct additional measures if needed to ensure compliance with their rules.

Whenever directed by the Soil Conservation District or the CONSTRUCTION MANAGER, furnish, install and maintain additional soil erosion control measures as directed.

Any fines or stop work orders shall be the sole responsibility of the Contractor. Fines by the District imposed to the OWNER will be deducted from the contractor's earnings.

1.02 Standards

The CONTRACTOR shall comply with the highest erosion and sedimentation control standards, whether Conservation District, Federal, State, or local. If the CONTRACTOR is in doubt as to the applicable standard, he shall notify the CONSTRUCTION MANAGER and comply with the CONSTRUCTION MANAGER'S directions. The local Soil Conservation District shall be notified 72 hours prior to any land disturbance activity.

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PART 2 – PRODUCTS

2.01 Materials

All materials such as seeds, mulch and bales, silt fences, etc, shall conform to the Specifications of the Conservation District and all other applicable Federal, State and local requirements and as shown on the Contract Drawings.

PART 3 – EXECUTION

3.01 General

Prior to construction, diversion ditches with catch basins and drains shall be constructed at the lowest area of the sites in question. All run-off water will be directed to these locations.

The settled water from the catch basins shall be drained to the natural local drains. The catch basins shall be cleaned regularly. The area shall be seeded with appropriate seed in the required amount per acre and mulched after final grading.

Permanent vegetation cover, mulching and baling shall be in accordance with the Conservation District specifications and all other applicable Federal, State and local requirements.

1000.12 MISCELLANEOUS SITE WORK

PART 1 – GENERAL

This work consists of the installation of miscellaneous site items including but not limited to traffic control signs, handicap ramps with detectable warning surfaces, handicap parking stall painting & signage, traffic stripes, and traffic markings.

PART 2 – PRODUCTS

Traffic control and parking signs shall be new on new posts and shall conform to M.U.T.C.D. and NJDOT 2019 Standard Specifications for Road and Bridge Construction.

END OF SECTION

SECTION G1010 – SITE CLEARING

PART 1 – GENERAL

1.01 Work Included

This work shall include the removal of all objectionable material and other obstructions interfering with the proposed construction project, such as, but not limited to: rubbish, junk, trees, stumps, brush, roots, down timber, wood, asphalt, concrete, building remains, and any other vegetation within the project area, and/or as defined by the drawings.

Any electrical, utility, or irrigation lines encountered during the work will be preserved by the CONTRACTOR until a determination has been made to remove or relocate the lines.

CONTRACTOR shall dispose of any trash and debris throughout the work day and at the end of every work day.

Noise and dust control shall be a priority at all times. In no case will dust, debris or excessive noise be permitted to leave the work area or reach pedestrians or other college facilities.

All sawcutting and jack hammering shall be by wet methods with supplemental vacuum or other as needed to ensure that silica dust and other hazardous or potentially objectionable dusts are not air entrained, wind blown, or tracked from the work site.

Any removed topsoil shall be stockpiled and preserved at the location shown on the plans.

PART 2 - MATERIALS

Water and proprietary dust control additives shall be used as needed during Clearing Site and as needed until final stabilization is achieved.

The CONTRACTOR shall submit materials information on any products to be used.

Waste material common to construction shall include, but not be limited to, the following:

Solid Waste: Equipment and materials resulting from demolition or restoration work, large pieces of asphalt or concrete, steel, asphalt shingles, wood, lumber, nails, windows, aluminum siding, doors, trees, stumps, bricks, wire, fences, drums, rubbish and construction debris generated by construction activities and rubble.

Asbestos Cement Pipe: This material shall be removed and disposed of in strict conformance to current OSHA Standards and NJDEP Regulated Waste Requirements. CONTRACTOR shall submit a Manifest to the Construction Manager indicating the ultimate disposal site, which shall be an approved receiving facility.

The CONTRACTOR shall collect and promptly dispose of all waste materials in the area of the work. Waste materials shall not be burned or buried on the Work Site.

No additional compensation will be made if such materials are encountered and special abatement procedures are required.

Collection and disposal of waste shall be a continuous function. The CONTRACTOR shall remove all waste materials before moving to other sections of the Work.

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Waste materials shall be disposed of at sites approved by the NJDEP's Office of Solid Waste Administration, which are compatible with the nature of materials being disposed. A complete listing of sites currently authorized by the NJDEP may be obtained from the Office of Solid Waste Administration, NJDEP, 32 East Hanover Street, Trenton, New Jersey 08625, Phone: (609) 984-4083.

Waste materials shall be transported by vehicles properly licensed to transport solid waste by the NJDEP, Office of Solid Waste Administration.

PART 3 - EXECUTION

3.01 Pre-Construction Photographs

The CONTRACTOR shall, at no extra cost, take color photographs and video recordings of the site prior to the commencement of construction. The photographs or video recording shall accurately depict the existing pre-construction condition of all curbs, sidewalks, driveways, fences and any and all areas subject to construction activities and adjacent within 50 feet of the 'site'. The date of all photographs or video tapes, as well as identification as to the location which the photographs depict must be provided.

1. The CONTRACTOR shall perform the work of clearing and grubbing to include the removal all existing improvements and other items within the work area as needed for construction of the work.
2. Any existing improvements found within the work limits, that are not called for to be removed, shall be preserved or protected, unless and until the Construction Manager authorizes the removal or abandonment of the items.
3. Until authorization is received to remove any item, that item shall remain the property of the OWNER. Upon request, such removed items shall be carefully handled and delivered to the location specified by the Facilities Manager.
4. All materials removed by the clearing and grubbing operations or by excavation, not to be retained by the OWNER, shall be removed from the project or otherwise disposed of by the CONTRACTOR.
5. Grading operations shall not be started in any areas until the clearing and grubbing operations have been completed, except that stumps may be removed in excavation areas during the grading operations.
6. The indiscriminate cutting or removal of trees will not be permitted. Living trees beyond the limit of the grading shall be cut or removed only as specified or directed. All trimming shall be done by skilled workmen and in accordance with good tree surgery practices. Paint required for cut or scarred surfaces of trees or shrubs selected for retention shall be an approved Asphaltum-based paint prepared specifically for tree surgery.
7. Areas where clearing and grubbing is proposed shall be cleared of all living or dead trees, stumps, brush, or other objectionable vegetation. All embedded stumps or root mats shall be removed to a depth of not less than two feet below the subgrade of slope surface.
8. The removal and disposal of Elm trees in all counties of the State are subject to provisions of State laws and to regulations of the State Department of Agriculture. Before removing any trees within the site of the project, the CONTRACTOR shall consult the plant pathologist of said department and shall comply with his

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instructions relating to the removal of Elm trees and the marking, segregation and disposal of Elm wood. The CONTRACTOR shall submit to the said plant pathologist an "Application for Instructions for Disposal of Encountered Elm Wood: on the form supplied by the New Jersey Department of Agriculture.

- 9. When shown on the drawings or field conditions warrant, topsoil shall be removed to the desired depth and stockpiled at the location shown on the plan.

PART 4 – MEASUREMENT AND PAYMENT

4.01 Method of Measurement

- A. Clearing Site shall be measured by the lump sum. The excavation needed additional subgrade to allow for the proper construction of the new curb, grass strip, slope grading, and sidewalk construction shall be included in the pay item for Clearing Site.

4.02 Basis of Payment

- A. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
CLEARING SITE	LUMP SUM

END OF SECTION

SECTION G1030 – SITE EARTHWORK

PART 1 - GENERAL

This section includes excavating, backfilling, trenching, grading, compacting, and handling of earthen materials for all site work. Where applicable, and directed by the Architect, this section will also apply to earthwork within the building envelope.

1.01 Utility Coordination & Protection

CONTRACTOR shall notify all relevant utility companies that construction will take place within close proximity to their existing facilities. Notification to the utilities shall be given 72 hours prior to start of any construction work in the affected areas.

Utility Mark-Out Telephone Number 1-800-272-1000

Materials for temporary support, adequate protection, and maintenance for all underground and surface utility structures, drains, sewers and other obstructions encountered in the progress of the work shall be furnished by the CONTRACTOR at his own expense.

Test pits required at various locations of potential conflict between existing and proposed utilities shall be performed as a first item of work following the establishment of soil erosion and site security measures. The CONTRACTOR shall, at his own expense, conduct test pits as needed to verify existing depths of facilities to determine the necessity of relocation or other protective measures.

Where the grade or alignment of pipe is obstructed by existing utility structures such as conduits, ducts, pipes, sewer laterals, or drains, the obstruction shall be permanently supported, relocated, removed or reconstructed by the CONTRACTOR in cooperation with the owners of such utility structures. Before proceeding the CONTRACTOR must reach an agreement with the CONSTRUCTION MANAGER on method to avoid obstruction.

No deviation shall be made from the required line or depth except with the consent of the CONSTRUCTION MANAGER.

All items damaged or destroyed by construction and subsequently repaired must be properly maintained by the CONTRACTOR.

Should any water lines or other utility service lines be broken or damaged by the CONTRACTOR during pipe installation, the CONTRACTOR shall make the repairs at no cost to the OWNER.

Should the CONTRACTOR need to temporarily remove existing service lines to properly and safely install other pipe, the CONTRACTOR shall coordinate and confirm with the CONSTRUCTION MANAGER. The cost for any temporary pipe removal shall be covered by the CONTRACTOR.

Where utility lines, structures, or appurtenances are required to be relocated, those items shall be restored to its original, or an improved, condition. No such relocation shall be done until approval is received from the owner of the utility or structure in question.

1.02 Separation of water mains, sanitary sewers, and storm sewers

A. General

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The following factors should be considered in providing adequate separation:

- Materials and type of joints for water and sewer pipes
- Soil conditions
- Service and branch connections into the water main and sewer line
- Compensating variations in horizontal and vertical separations
- Space for repair and alterations of water and sewer pipes
- Off-setting of pipes around manholes

B. Parallel Installation

Water mains shall be laid at least 10 feet horizontally from any existing or proposed sewer main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, the State Environmental Protection Agency may allow deviation on a case-by-case basis, if supported by data from the CONSTRUCTION MANAGER or ENGINEER. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer.

C. Crossings

Whenever water mains must cross building drains, storm drains, or sanitary sewers, the water main shall be laid at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer, and at least 12 inches above or below a drain. This vertical separation shall be maintained for the portion of the water main located within 10 feet horizontally of any sewer or drain it crosses.

1.03 Dewatering

The dewatering of all areas where work must be performed under this Contract is the responsibility of the CONTRACTOR and no additional sum will be allowed for any dewatering operation, overtime, equipment rental, or any other expense incurred due to the occurrence of ground water, surface water or water from possible leakage of existing buildings, structures and piping in the vicinity of the CONTRACTOR'S operations.

Should water be encountered, the CONTRACTOR shall furnish and operate suitable pumping equipment of such capacity adequate to dewater the trench. The trench shall be sufficiently dewatered so that the laying and joining of the pipe is made on dry material. The CONTRACTOR shall convey all trench water to a natural drainage channel or storm sewer without causing any property damage in accordance with state and/or local requirements. Trenches shall remain in a dewatered state until backfilling has been completed.

Disposal of silt and debris which accumulates during construction shall be performed in accordance with state and/or local requirements.

The CONTRACTOR shall be responsible to investigate the site and groundwater conditions prior to bidding the Contract.

1.04 Permit

The CONTRACTOR shall be responsible for obtaining and paying for any permits required for dewatering and disposal.

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1.05 Excavating, trenching, backfilling, and compacting

A. General

This section includes all excavation and backfill for items to be constructed, removed or relocated.

All excavation shall be in compliance with the Rules and Regulations of the State of New Jersey Department of Labor and Industry, Bureau of Engineering and Safety, N.J.A.C. 12:180, any OSHA safety regulations that are associated with such activities, and the Soil Conservation District.

Refer to the Contract Drawings for the locations where earthwork and backfill materials are to be used.

THE CONTRACTOR WILL BE REQUIRED TO PROTECT EXISTING SITE SOILS FROM SATURATION DURING THE WORK. PAVING OF THE PARKING LOT TO TOP OF BASE PAVEMENT SHALL BE DONE PRIOR TO STRIPPING AND EXCAVATING FOR THE BUILDING.

STABILIZATION OF DISTURBED AREAS SHALL BE DONE DURING THE WORK AS SOON AS POSSIBLE. DO NOT ALLOW EXPOSED SOIL AREAS TO BECOME SATURATED DURING THE WORK. PROVIDE TEMPORARY GRADING, GRAVEL COVER, AND ALL ELSE REQUIRED TO AVOID ACCUMULATING RUNOFF WITHIN THE SITE.

THE CONTRACTOR IS TO REMOVE AND REPLACE SATURATED, SOFT, OR LOOSE SOILS, AS DIRECTED, AT NO COST TO THE OWNER. NO PAYMENT WILL BE MADE FOR REPLACING OR REWORKING SOILS THAT HAVE BEEN EXPOSED TO PRECIPITATION OR THAT ARE NOT SUITABLE FOR SUPPORT OF THE BUILDING AND SITE IMPROVEMENTS.

Paving of the parking lots shall include parking stalls, aisles and any repair areas e.g. trenches.

B. Submittals

All materials used for backfill, including common fill and bedding materials, shall be approved by the CONSTRUCTION MANAGER prior to placing the materials in the pipe trench.

Samples of the materials shall be submitted to an approved testing agency for analysis. The test results and report stating that the materials meet the requirements of these Specifications and the Specifications of Federal, State and local authorities (where applicable) shall be submitted.

PART 2 - PRODUCTS

2.01 General

Soils used as backfill, embankment or otherwise in the work shall conform to the following:

2.02 Backfill Materials

A. Dense-Graded Aggregate (DGA)

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Produce virgin DGA from broken stone, crushed gravel, or blast furnace slag, all conforming to NJDOT 2019 Standard Specifications for Road and Bridge Construction. At least 90 percent of all fragments shall contain at least one fractured face.

Sieve Size	Percent Passing
1 1/2"	100
3/4"	55-90
No. 4	25-50
No. 50	5-20
No. 200	3-10

B. Bank Run Sand and Gravel

Bank run sand and gravel (soil aggregate Type I-2) shall be bank run supply, free of clay and foreign material, as approved by the Geotechnical Engineer. Bank run sand and gravel (soil aggregate Type I-2) shall meet the following gradation:

Sieve Size	Percent Passing
2"	100
3/4"	65-100
No. 4	40-75
No. 5	5-30
No. 200	0-7

Samples of bank run sand and gravel from all proposed sources shall be submitted in accordance with NJDOT 2019 Standard Specifications for Road and Bridge Construction Section 106.03, "Foreign Materials and Equipment."

Bank run sand and gravel, meeting the above specification shall be used for "Select Backfill" on an "If and where directed" basis authorized by the CONSTRUCTION MANAGER. In circumstances when existing material is deemed unsuitable for re-use in trench backfilling, the Soils Inspector will provide authorization to furnish, place and compact Select Backfill in accordance with the NJDOT 2019 Standard Specifications for Road and Bridge Construction, as amended thereto.

C. AASHTO No. 57 STONE

Broken stone or screened gravel (AASHTO No. 57) shall be a clean, hard aggregate. Prior to laying pipe, the stone bed shall be accurately leveled to slopes as shown on the plan. Where required, stone bedding shall be compacted by tamping or other approved means. The broken stone or screened gravel shall conform to the following gradation:

Sieve Size	Percent Passing
1 1/2"	100
1"	95-100
1/2"	25-60
No. 4	0-10
No. 8	0-5

Broken stone shall be construed as the 3/4" clean stone pipe bedding and sub-base material

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to be used by the CONTRACTOR when work is in wet conditions.

Broken stone shall also be used within any underdrains to be constructed at the direction of the CONSTRUCTION MANAGER.

D. Structural Fill (I-13)

The use of I-13 Aggregate shall conform to NJDOT 2019 Standard Specifications for Road and Bridge Construction Section 901.11.

2.03 Filter Fabric

Filter fabric shall be non-woven, synthetic fiber material with sieve design to keep the bedding and other specified materials separate from the surrounding soils. Filter fabric shall also include materials designed to keep backfill soils out of pipe penetrations, and joints. The material shall have a minimum thickness of 15 mils, tensile strength of 130 lbs., elongation at break of 62% and trapezoidal tear strength of 70 lbs. The opening size shall be selected for the specific soils in accordance with manufactures and ASTM standards.

Filter fabric shall be used to surround any underdrains, and around all stormwater pipe joints, and all pipe penetrations into inlets, outlets and control structures. Minimum overlap shall be 12-inches and 12 inches each side of a joint.

PART 3 - EXECUTION

3.01 Construction Equipment

The CONTRACTOR shall select his equipment such that, to the maximum extent possible, damage to existing surfaces and structures is minimized. It is the CONTRACTOR's responsibility, to repair, at his expense, any damages due to the use of any equipment to complete the work.

3.02 Noise, dust, and odor control

Noise and dust control shall be a priority at all times. In no case will dust or debris or excessive noise be permitted to leave the work area or reach pedestrians or college facilities.

All saw cutting and jack hammering shall be performed using methods to ensure that silica dust or other hazardous dusts do not become airborne.

The CONTRACTOR shall comply with all O.S.H.A and County Health Department requirements.

3.03 Protection of Trees

Special care shall be taken to avoid damage to trees and their root system. Machine excavation shall not be used when, in the opinion of the CONSTRUCTION MANAGER, it would endanger the tree. Where the line of trench falls within the limits of the limb spread, headers are required across the trench to protect the tree. The operation of all equipment (particularly when employing booms), the storage of materials, and the disposition of excavation shall be performed so that no tree parts or roots will be affected, unless they are proposed to be removed.

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3.04 Trench Support

Where necessary, particularly to prevent disturbance, damage or settlement of adjacent structures, pipelines, utilities, improvements or paving, excavation shall be adequately sheeted and braced. Details of sheeting and bracing shall be submitted to the CONSTRUCTION MANAGER prior to installation.

Sheeting and bracing shall remain in place until the pipe has been laid, tested for defects and repaired, if necessary, and the earth around the pipe compacted to a depth of two feet over the top of the pipe. Sheeting and bracing of all excavation shall comply with the latest statutes of the State of New Jersey governing safety of Workers in the Construction Industry.

Where sheeting and bracing systems are used, they must be designed by a Professional Engineer licensed in the State of New Jersey. The CONTRACTOR shall submit a sheeting plan to the CONSTRUCTION MANAGER as proof that the design has been done; however, this submittal will not be considered as a shop drawing and the Professional Engineer, previously mentioned, will not be responsible for the adequacy or safety of the sheeting design or installation. The sheeting design shall conform to all applicable requirements of the New Jersey Construction Safety Code and the Occupational Health and Safety Act.

Any damage to new or existing structures occurring through settlement, water or earth pressure, or other causes due to inadequate bracing or through negligence or fault of the CONTRACTOR in any other manner, shall be repaired by the CONTRACTOR at his own expense.

The CONTRACTOR shall specifically comply with OSHA Standards for Excavations (29 CFR Part 1926), "OSHA Standards." As such, the CONTRACTOR shall be responsible for providing a "competent person" as defined in the OSHA Standards and as required by the standards. The CONTRACTOR shall be solely responsible for the selection, design, installation, and implementation of all "protective systems" as defined in the OSHA Standards. The pipeline design by the OWNER or CONSTRUCTION MANAGER does not include the design of the "protective systems" since the design of the "protective systems" is the responsibility of the CONTRACTOR.

3.05 Excavating and Bottom Preparation

A. General Excavation

General excavation shall consist of the satisfactory removal, separation and stockpiling of earth as required to construct the work. Excavation below existing grade to enable any required construction or removals is included. It is expressly understood that any reference to earth, rock, silt, debris or other materials on the Drawings or in the Specifications is solely for the OWNER's information and shall not be taken as an indication of classified excavation or the quantity of earth, rock, silt, debris or other material encountered.

Existing top soil shall be separated and stockpiled, as shown on the plan, for reuse on site. The stockpile shall be maintained, reworked and protected as needed to ensure the top soil remains viable. Prior to the final installation of topsoil, it shall be tested, and a plan for addition, modification, and fertilization shall be submitted.

All excavation shall be made to the lines and grades indicated on the Drawings or established in the field by the CONSTRUCTION MANAGER.

Excess excavated materials and excavated materials unsuitable for backfilling shall be properly disposed of by the CONTRACTOR. The CONTRACTOR shall furnish to the

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CONSTRUCTION MANAGER satisfactory evidence that an appropriate disposal site will be used.

An open trench shall never exceed 200 feet in advance of laying pipe, and it shall be reduced as required by anticipated weather conditions.

Where there are unstable trench walls, the CONTRACTOR shall properly support the trench during pipe-laying operations.

Where proposed utilities conflict with existing utilities, temporary support, protection, and maintenance of all underground and surface utilities shall be installed as directed by the CONSTRUCTION MANAGER and furnished by the CONTRACTOR at no expense to the OWNER. The CONTRACTOR shall coordinate with the appropriate utility companies if necessary.

No deviation shall be made from the required line of grade except with the written consent of the CONSTRUCTION MANAGER or ENGINEER.

Prior to placing bedding, pipe or concrete within any excavation, the bottom of the excavation shall be proof-rolled or compacted to not less than 95% of maximum dry density in accordance with ASTM D-1557. Testing shall be performed to confirm compliance with ASTM D-1557 requirements.

No excavation or backfilling shall be performed during or prior to wet weather conditions. All excavations shall be protected, graded, and drained to ensure that standing or flowing water or runoff does not compromise the soil or interfere with proper compaction.

B. Trench Width

Widths of trenches shall be held to a minimum to accommodate the pipe and appurtenances. The trench width shall be measured at the top of the pipe barrel and shall conform to the following limits:

Minimum: Outside diameter of the pipe + 8" (i.e. 4" each side)

Maximum: Outside pipe diameter + 24"

Stone bedding shall be laid across the entire trench width prior to laying pipe. If the trench width exceeds the limits above, the additional stone required shall be supplied at no cost to the OWNER.

C. Trench Depth

1. Ground cover depths for all pipes shall meet the requirements of Deptford Township MUA.
2. Ground cover depths for electrical duct banks, gas conduits, and communications conduits shall meet the requirements of Deptford Township's ordinance and all other applicable code requirements.
3. Earth. The trench shall be excavated to the depth required, so as to provide a uniform and continuous bearing and support for the pipe barrel above the bedding on solid and undisturbed ground at every point between joints, except that it will be permissible to disturb the finished trench bottom over a maximum length of 18 inches near the middle of each length of pipe: by the withdrawal of pipe slings or other lifting tackle. When required, bell holes shall be provided. The finished trench bottom shall be accurately

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prepared by means of hand tools. Bell holes and sling slots shall be backfilled by hand prior to proceeding with initial backfill.

4. Unsuitable Bottom. When unsuitable material is found below subgrade, as determined by the soils inspection technician, CONTRACTOR shall remove the material to a depth determined by the inspector, and provide compacted bedding material to backfill the trench. Extra work and material needed shall be covered by the CONTRACTOR.

3.06 Trench Backfilling

A. Bedding

All structures shall be placed on 6-inches of crushed stone.

All pipes and ducts shall be placed on class B bedding (6" thick or greater). Class B bedding, or other coarse or crushed aggregate shall not be used under stormwater discharge pipes within 50 feet of a basin outlet control structure. Existing soil shall be thoroughly compacted to support for the pipe.

B. Initial Backfill

Backfill around the pipe or footing to cover at least 12 inches over the top of the pipe or footing. Each layer shall be thoroughly compacted to 95% of maximum dry density. Backfill material shall be approved site soils or structural fill.

C. Trench Backfill

To fill the leftover volume, dirt material shall be placed in 6" increments and compacted to at least 95% of its maximum dry density established by ASTM D-1557. This procedure shall continue until grade is 6" below finished grade. 6" of topsoil shall be installed in the leftover volume and shall be seeded and fertilized.

The trenches and excavations shall be wet down, or the excavated material shall be dried as required to obtain within 2 percent of optimum moisture content while the backfilling is being carried out. The CONTRACTOR may use mechanical equipment to place the backfill. This shall be done in such a manner that the material does not free fall, but shall be so placed that it will flow onto the previously placed material.

All trenches shall be backfilled, compacted and base paved in a timely fashion. All base paved surfaces shall be allotted a minimum of 60-days settlement time prior to final paving of surface course.

D. Surface Conditions

The trench surface shall be regularly attended to during the course of the Contract. The CONTRACTOR shall take prompt corrective measures to correct any settlement or wash-out. The trench surface shall be maintained in a safe condition and shall not interfere with natural drainage.

3.07 Foundation Excavation & Backfill

Where a foundation is located on the Contract Drawings, the CONTRACTOR shall properly prepare and compacting the subgrade for the foundation. After excavation to grade, the surface shall be rolled, tamped or otherwise consolidated to compacted to at least 95% of its maximum dry density established by ASTM D-1557 and adequately prepare the bottom for the loads to be placed upon it. Where required, broken stone shall be placed on the surface and shall be rolled or tamped into the subgrade in such thickness as may be

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required.

Prepared excavations shall be protected from rain, or other disturbances until acceptance of the Work. The prepared subgrade will be tested prior to placing bedding materials or concrete. All unsuitable materials shall be recompacted or removed and replaced at the direction of the Construction Manager.

The placing of pipelines or the pouring of foundations or floor slabs is to commence within twenty-four (24) hours of final approval of the bedding. Rain, frost and other factors which in the opinion of the CONSTRUCTION MANAGER are potentially damaging to the subgrades, and which occur after the final approval but before or during the pouring, will require another inspection of the subgrade by the soils inspector. The CONTRACTOR is to correct any deficiencies found at this time, at his own expense.

3.08 Backfilling at Structures

A. Placement of Backfill

Prior to backfilling areas, the CONTRACTOR shall ensure the following procedures are completed:

- a. Concrete formwork is removed.
- b. Inspection is performed by the CONSTRUCTION MANAGER of the construction below the finished grades including, damp-proofing, waterproofing, and perimeter insulation.
- c. Inspection, testing, approval, and recording locations of underground utilities.
- d. All trench shoring and bracing are removed and subsequent voids are backfilled with proper materials.
- e. Trash and debris are removed.

Backfill is to be spread by mechanical equipment or by manual means and is to be mixed thoroughly and spread in lifts. Backfill is to be built up in horizontal layers as nearly even as practicable to prevent the thickness of any lift from exceeding 12 inches.

B. Compaction of Backfill

The backfill is to be compacted near optimum moisture content by means of vibratory compactors to 95% of its established Modified Proctor Density established in accordance with ASTM Designation D 1557-72T Method C. Should the obtained density of the compacted fills be less than specified, the CONTRACTOR is to re-compact the area until the required density is reached.

No heavy equipment shall be used within four feet (4') of existing and proposed utilities and structures or within the stormwater management basins.

Each successive lift shall not be placed or compacted until the previous lift is inspected and approved by the soils inspector.

C. Moisture Content

The moisture-density curve for the backfill material used is to be employed as a guide in controlling moisture so as to achieve the required degree of compaction. When fill materials become too wet for the required compaction, they shall be dried by a method approved by the soils technician prior to commencing or continuing compaction operations.

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Likewise, if the fill materials become too dry for the required compaction, they are to be moistened by a method approved by the soils technician prior to commencing or continuing compaction operations. Moisture content shall be controlled to within 3% of optimum moisture content.

3.09 Backfilling Site Areas

Areas of embankment and areas not otherwise required to be compacted to 95% shall be compacted to 90% of maximum dry density as determined by ASTM D-1557. This includes lawn areas, landscape areas, and basin berms. All other areas within the site except for the bottom of the basins shall be compacted to 95% of the modified proctor density.

3.10 Removal of Existing Fill Material & Replacement with Structural Fill

The CONTRACTOR shall maintain a maximum slope of 2 to 1 in the area where the building excavation work is being performed. The CONTRACTOR must place the structural fill in lifts not exceeding ten inches (10") in loose thickness and compacted to 95% density using a smooth drum vibratory roller having a minimum static weight of 10 tons. All fill must be placed at the optimum moisture content of +/- 2% as determined in accordance with ASTM standard D1557. There is no additional compensation for any extra structural fill required. in the area of the building footing.

PART 4 – MEASUREMENT AND PAYMENT

4.01 Method of Measurement

- A. Excavation, Unclassified shall be measured by the cubic yard. Excavation associated with the removal of concrete sidewalk, sawcutting, associated excavation work, excavation work for regrading, etc. shall not be measured for payment but shall be included in the price of Clearing Site.

4.02 Basis of Payment

- A. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
EXCAVATION, UNCLASSIFIED	CUBIC YARD

END OF SECTION

SECTION 02770 – CONCRETE WALKS, CURBS, GUTTERS, & STRUCTURES

PART 1 – GENERAL

This work will include the labor, materials and equipment to excavate and construct concrete sidewalks, 4" thick.

1.01 References

American Concrete Institute

ACI1347R-88, "Guide to Formwork for Concrete".

ACI 301-89, "Specifications for Structural Concrete for Buildings".

ACI 304R-89 "Guide for Measuring, Mixing, Transporting and Placing Concrete"

ACI SP-66 (88), "ACI Detailing Manual".

ACI318-89 (92), "Building Code Requirements for Reinforced Concrete and Commentary".

American Welding Society

AWS D12, "Recommended Practices for Welding and Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction".

Concrete Reinforcing Steel Institute

"Manual of Standard Practice".

In the event of a conflict between the above references and these Specifications, the one having the more stringent requirements shall govern.

1.02 Standard Requirements

In addition to the below listed requirements, please refer to NJDOT 2019 Standard Specifications for Road and Bridge Construction for all concrete related requirements.

The Contractor is to furnish all labor, equipment and materials required to comply with the intent of the Contract Drawings pertaining to concrete work. All tests, samples, shop drawings, and certifications are to be provided in a timely manner in order not to delay the review process or the construction schedule.

1.03 Submittals

Prior to the start of any construction at the Project Site or ordering of any materials associated with the concrete construction, the Contractor shall meet with the OWNER and/or CONSTRUCTION MANAGER and submit for review and approval his proposed construction methods. This shall include, but not limited to: form section layout and construction, control of exposed concrete color variation, finishing techniques to be employed, and methods of curing.

All design mixes, tests on reinforcing steel and other aspects of quality control are included

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in this and other Divisions of the Specifications. All shop drawings and material samples required to expedite the work of this Division are to be submitted in sufficient time by the Contractor to allow for the proper review and approval by the CONSTRUCTION MANAGER without delaying the progress of the work.

The CONTRACTOR shall submit approvals from NJDOT of the mix design, aggregate and cement sources and any admixtures that may be incorporated in the work.

PART 2 – PRODUCTS

All concrete shall conform to NJDOT requirements for Class B concrete.

Only pre-approved NJDOT mix designs shall be permitted to be used in the work.

All concrete material used shall meet the requirements found in NJDOT 2019 Standard Specifications for Road and Bridge Construction.

PART 3 - EXECUTION

3.01 Approvals

The CONTRACTOR shall use the plans to identify all concrete items and their layout. A detailed layout of the formwork shall be submitted to the CONSTRUCTION MANAGER prior to construction to ensure compliance with the Barrier-Free Subcode and the 2010 ADA requirements.

Prior to pouring concrete, the CONSTRUCTION MANAGER shall inspect and approve the formwork. Any deficiencies must be corrected immediately, prior to pouring concrete.

3.02 Construction

All concrete work shall be constructed as noted on the plans and details unless otherwise directed in the field by the CONSTRUCTION MANAGER. Layout control and expansion joints are at spacings of 8 ft on center and 24 ft on center respectively. Expansion joints shall be located at all foundations, and existing walks and structures. Adjust locations of joints to control cracking at re-entrant corners and to ensure thin wedges are allowed to shrink and expand without uncontrolled cracking. Joint locations shall also be adjusted to achieve a pleasing and nearly uniform pattern which shall be subject to the approval of the Construction Manager.

NO WATER SHALL BE ADDED TO ANY CONCRETE AFTER IT IS BATCHED AT THE PLANT.

NO WATER SHALL BE APPLIED TO THE SURFACE DURING FINISHING OR WITHIN 4 HOURS OF PLACEMENT.

Concrete may be placed with any desired slump and may be produced with water reducing admixtures conforming to ASTM and NJDOT 2019 Standard Specifications for Road and Bridge Construction.

Placements shall be made in the morning with due regard to the time required for setting, finishing and curing needed before curing with plastic or blankets is begun. Discoloration or imperfections resulting from improper curing or application of curing methods to soon after placement shall be cause for rejection of the concrete.

All concrete, including but not limited to flat work, shall be consolidated by vigorous

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mechanical vibration prior to screeding and floating.

All concrete shall be cured with plastic and/or blankets (depending upon the weather conditions) for a minimum of three (3) days. A no time from placement to the completion of the 3 day curing period shall the concrete be allowed to drop below 50 degrees F. Additional blankets, heat, or other approved methods shall be used to ensure the curing complies with these specifications.

All concrete shall receive a light brush finish as approved by the CONSTRUCTION MANAGER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 Method of Measurement

- A. Concrete Sidewalk shall be measured by the square yard. Removal of existing sidewalk, Sawcut, Backfill, and Restoration shall not be measured for payment but shall be included in the various items of the proposal.

4.02 Basis of Payment

- A. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
CONCRETE SIDEWALK, 4" THICK	SQUARE YARD

END OF SECTION

SECTION 02530 – SANITARY SEWER

PART 1 – GENERAL

1.01 Work Included

- A. Provide all labor, superintendence, materials, tools, transportation, plant equipment and all means of construction necessary and reasonably incidental to the complete and full installation of sanitary sewer piping and associated appurtenances as authorized and directed by the OWNER or OWNER's CONSTRUCTION MANAGER under this Contract and as specified herein.
- B. All materials and labor obviously a part of the work, and as necessary for proper installation and/or operation of same, although not specifically indicated in the Contract Documents and/or in the specifications shall be provided by the CONTRACTOR as if called in detail without additional cost to the OWNER.
- C. All materials installed will be inspected by the OWNER/CONSTRUCTION MANAGER. All material that fails to pass inspection shall be repaired or replaced to the satisfaction of the CONSTRUCTION MANAGER at no additional cost to the OWNER. Inspection shall then be repeated until satisfactory results are achieved.
- D. All sanitary sewer shall be installed in strict accordance with the New Jersey Department of Environmental Protection Regulations and the most current Deptford Township Municipal Utilities Authority ("DTMUA") Rates, Rules, and Regulations. If any item shown or specified herein is in conflict with the DTMUA Rates, Rules, and Regulations, DTMUA Rates, Rules, and Regulations shall govern. It shall be the CONTRACTOR's responsibility to determine and comply with applicable code requirements.
- E. All dimensions for pipe and equipment sizes shown on the Contract Drawings are for guidance only and shall be verified or altered by the CONTRACTOR to suit actual conditions and equipment selected. All required changes to the piping arrangement shall be approved by the CONSTRUCTION MANAGER.
- F. Small piping as shown on the Contract Drawings does not necessarily show all fittings, offsets, unions, or other appurtenances. All such items shall be provided as required.
- G. Contractor shall keep all pipes free of refuse, dirt, and debris during construction. After complete installation of each piping system, CONTRACTOR shall clean and flush all pipes in the system to the satisfaction of the CONSTRUCTION MANAGER. All pipes shall be cleaned and flushed before hydrostatic testing.
- H. The minimum size of sewers shall be eight inch (8") diameter. A minimum cover of three feet (3') is required for all sanitary sewer pipe to be installed.
- I. A laser and target shall be used to lay pipe to proper slope.
- J. All sewer main must be laid with a six-inch (6") thick 3/4 inch clean crushed stone bed up to the spring line of the pipe.
- K. Sanitary clean-outs shall be installed every seventy-five feet (75') on sanitary sewer laterals, as shown on the plans.

PART 2 – PRODUCTS

2.01 Materials

- A. High-density Poly Ethylene (HDPE) Pipe and Fittings
HDPE pressure pipe shall comply fully with AWWA C906 and ASTM D3350.

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HDPE pipe joints shall be butt-fused, except where otherwise indicated on the Drawings or specified herein. Butt fusion techniques shall meet all requirements of ASTM D2657 and D3261.

HDPE fittings shall be made from material meeting the same requirements as the pipe. All HDPE fittings shall be molded, turned or otherwise fabricated by the same manufacturer. All fittings shall be marked with size, dimension ratio, pressure rating, and appropriate ASTM specification number.

HDPE pipe shall be installed in conformance with the manufacturer's recommendations, and shall comply with the alignment indicated on the Drawings.

Pipe shall be free from defects, such as bubbles or other imperfections, in accordance with accepted commercial practice.

B. Laterals

A size four inch (4") lateral shall be laid at a minimum grade of 1/4 inch per foot and in a straight line from the point of connection to the main to the vertical riser and shall include a ten foot (10') length behind the riser.

The lateral shall be connected to the main with a wye fitting and shall be at least four feet (4') below the surface of final ground. Lateral to be installed at ninety degrees (90°) to the main.

A four-inch (4") vertical riser shall be installed for each lateral.

A four-inch by four inch (4" x 4") Tyler two-way type tee shall be installed for each lateral at the riser.

Each riser shall have a five inch (5") cast iron ferrule with a four (4) inch brass plug.

Riser shall be placed within two feet (2') of the curb or edge of paving.

Riser location shall be permanently marked on curb with an "S" saw cut on top of curb.

Risers cannot be installed in driveways and sidewalks (no exceptions).

All laterals shall be installed before pressure test is performed.

A deep cut lateral shall be installed where the depth of the main is eight feet (8') and over. This may be accomplished with forty-five degree (45°) bends.

Lateral connection to existing sanitary sewer connection shall be made with saddle type connection consisting of stainless steel bands, cast iron flange and rubber gasket.

The lateral shall have five (5) feet horizontal separation from the water service for single-family dwellings. Under no circumstances shall the horizontal separation be less than The Minimum requirements of the plumbing sub code adopted by the Township of Deptford.

For townhouses, the minimum separation between the water service and sanitary sewer shall be five feet (5') minimum at the shutoff/cleanout location. The lot width shall be designed accordingly to accommodate this separation as well as three feet (3') from property line and driveway width.

C. Manholes

All manholes shall be constructed of precast reinforced concrete in accordance with ASTM C-478.

Joints of manhole sections shall be formed entirely of concrete in accordance with ASTM C-443 and shall be made with a rubber gasket. Joints shall be self-centering and watertight. All seams and lift holds must be grouted with non-shrink grout.

Base sections shall be furnished with a compressible rubber ring.

Channels are to be smooth and properly constructed of concrete, if not pre-cast. The height of the channel shall be 2/3 of the pipe.

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The outside surface of entire manhole shall be given a protective coating of asphalt paint with the total dry film thickness of not less than four (4) mils.

The manhole shall be laid on a bed of twelve-inch (12") thick 3/4 clean crushed stone. Also, stone bedding shall be installed under first pipe in and out.

No more than twelve inches (12") of concrete block can be used to raise casting to proper grade.

Between manholes, pipe shall be straight and at uniform grade. Spacing shall not exceed 300 feet.

Where pipe is tied into existing manhole, the opening must be core drilled. A gasket must be installed in the opening. A detail must be submitted.

The cone section of the manhole shall have a thirty-inch (30") diameter opening at the top.

D. Manhole Appurtenances

Manhole frames and covers shall be of the circular flared type frame with round flange equal to Catalog Number 1012B thirty inch (30") opening as manufactured by Campbell Foundry Company. Frames and covers must be manufactured in the United States.

All manhole covers shall have two (2) recessed lifting handles.

Locking devices, equal to Campbell Foundry Company number 1460B with lock device type D - countersunk bolts, shall be provided on frames and covers on all manholes located in easements. A key shall be supplied to the DTMUA with each locking type unit.

All covers shall be cast with the identifying letters "SEWER." Letters shall be two inches (2") high and embossed against a recessed background.

Manhole rungs shall be extruded aluminum alloy with the step drop front design. Rungs shall be cast in the vertical sides of the manhole sections on twelve-inch (12") centers.

Manhole inserts shall be installed beneath the cover to prevent storm water inflow.

E. Concrete

All concrete used for sanitary sewer installation shall meet the requirements of Section 02770 and the DTMUA Rates, Rules, and Regulations.

Class "C" concrete shall be used for the construction of concrete cradles and Class "D" for the construction of thrust blocks. Batching and mixing equipment shall be of a size and type suitable for work to be done and shall be subject to the approval of the CONSTRUCTION MANAGER.

F. Aggregates

All aggregates used for sanitary sewer installation shall meet the requirements of Section G1030 and the NJDOT 2019 Standard Specifications for Road and Bridge Construction.

G. Water

All water used for sanitary sewer installation and cleaning shall be clean, fresh, and free of oils, acids, salts, organic matter, or other injurious substances.

H. Reinforced Steel

All reinforced steel used for sanitary sewer installation shall be Grade 40, conforming to the requirements of either ASTM Designation A-615 or ASTM Designation A-617.

I. Wire Mesh or Fabric

Wire mesh or fabric shall conform to ASTM Designation A-185 as amended and revised to date.

J. Concrete Block

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Concrete block used for the construction of manholes, inlets, and catch basins shall conform to the requirements of the American Society for Testing Materials Specifications, as amended and revised to date. Concrete block used for the construction of manholes shall have the required radius and batter.

K. Brick

Brick shall be Grade MA conforming to the American Society for Testing Materials Specifications therefore, as amended and revised to date.

L. Mortar

Mortar shall be 1:2 cement-sand mortar mix.

M. Iron Castings

Iron Castings shall conform to the requirements of the current American Society for Testing Materials Specification for gray iron casting as amended and revised to date, supplemented as follows:

Castings shall be boldly filleted and risers shall be sharp and perfect. The castings shall be true to pattern in form and dimension, free of pouring faults, sponginess, cracks, blow holes and other defects which affect their strength and value for the service intended. The bearing surfaces of frames, covers, and grates shall be fitted together so as to prevent rocking and the pieces match marked.

N. Ladder Rungs

All ladder rungs shall be fabricated of extruded aluminum alloy conforming to the current American Society for Testing Materials Specifications and shall be subject to the approval of the Engineer.

O. Select Backfill

All backfill used shall meet the requirements of Section G1030 and the NJDOT 2019 Standard Specifications for Road and Bridge Construction.

PART 3 – EXECUTION

3.01 General Construction

A. Excavation & Earthwork

All excavation and earthwork procedures shall meet the requirements of Section G1030 and NJDOT 2019 Standard Specifications for Road and Bridge Construction.

B. Pipe Laying & Installation

All pipe and fittings shall be installed to the lines and elevations shown on the plan, and in accordance with the manufacturer's recommendations.

Suitable tools and equipment shall be used for proper handling, storing, laying pipe and fittings. In order to avoid damage to the interior coatings of pipe, lifting hooks or bars shall not be inserted therein. Each pipe and fitting shall be checked for defects and injuries as laying proceeds. Imperfect pipe materials shall be rejected and removed from the work. Pipe found to be defective after installation shall be removed and replaced with approved material.

The interior of all pipes shall be cleaned of dirt, and other deleterious materials, and kept clean, as the next section of pipe is laid. During the progress of the work, the exposed ends of the pipe shall be provided with approved temporary covers fitted to the pipe, in order to prevent material from entering the pipe.

Where pipe must be cut to fit as closing pieces, such cuts shall be evenly and squarely made in a workmanlike manner with approved equipment. Damage to linings or coatings

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shall be satisfactorily repaired or replaced at the CONSTRUCTION MANAGER's discretion.

All pipes shall be laid in accordance with approved details. All pipes shall be laid on top of a layer of approved foundation material that meets the requirements of Section G1030. The same material shall be carried up to a level four (4) inches from the bottom of the pipe. Where concrete cradles are used to support the pipe, foundation material will not be required. No solid blocking will be permitted under pipe. Joints shall be made in accordance with recommendations of the manufacturer.

C. Pipe Bedding and Trenching

The minimum depth of cover shall be three feet (3') from the top of the pipe to the finished grade.

The trench shall be dug to the required depth and alignment shown on the plans. The trench shall be braced and drained when necessary, so that workmen may work therein safely and efficiently.

The trench width at the ground surface may vary with and depend upon its depth and the nature of the ground encountered. Unless otherwise authorized by the DTMUA ENGINEER in writing, the trench width shall be ample to permit proper installation of the pipe or accessories and proper placing and compacting of backfill. Unless otherwise authorized by the DTMUA ENGINEER, the minimum clear width of sheeted or unsheeted trench shall be 18 inches (18") or one foot greater than the outside diameter of the barrel of the pipe, whichever is greater, and maximum width of trench at the top of the pipe shall not be greater than the outside diameter of the barrel of the pipe plus two feet.

In cases where use of special equipment designed to cut narrow trenches is permitted in writing by the DTMUA ENGINEER, precaution shall be exercised to insure bearing for the full length of the barrel of the pipe.

The trench, unless otherwise specified, shall have a flat bottom conforming to the grade to which the pipe is to be laid. The pipe shall be laid upon sound soil cut true and even, so that the barrel of the pipe will have a bearing for its full length. When any part of the trench is excavated below grade by the CONTRACTOR's inadvertence or where, in the opinion of the DTMUA ENGINEER, the use of a machine excavator has rendered unfit an otherwise suitable bottom, the trench shall be corrected with approved material, thoroughly compacted. When the bottom material uncovered at sub-grade is soft and in the opinion of the DTMUA ENGINEER, cannot support the pipe, further depth and/or width shall be excavated and refilled to pipe foundation grade as required.

Ledge rock, boulders and large stones shall be removed to provide a clearance of at least six inches below all parts of the pipe, valves or fittings. Excavations below grade in rock or in boulders shall be refilled to grade with chocked stone no larger than one inch in size, thoroughly compacted to provide support for the pipe.

Wherever necessary to prevent caving, the trench shall be adequately sheeted and braced. The sheeting shall remain in place until the pipe has been laid and the earth around it compacted to a minimum depth of two feet (2') over the top of the pipe.

All pipe and accessories shall be carefully lowered into the trench pieces by piece in such a manner as to prevent damage. Under no circumstances shall the pipe and accessories be dropped or dumped into the trench.

Every precaution shall be taken to prevent foreign material from entering the pipe. During laying operations no debris, tools, clothing or other material shall be placed in the pipe.

At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means satisfactory to DTMUA ENGINEER.

Whenever it is necessary to deflect pipe from a straight line either in a vertical or horizontal plane, the amount of deflection in each joint shall not exceed four degrees.

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Where groundwater is encountered, a six inch (6") thick $\frac{3}{4}$ " clean crushed stone bed must be provided.

D. Safety Compliance

All work performed for the Authority or in the Authority's jurisdiction shall comply with all OSHA and PEOSHA safety standards relating to but not limited to Trenching and Shoring, Confined Space Entry, Work Zone Safety and Personal Protective Equipment.

3.02 Inspection & Testing

A. Inspection

All construction of sewerage or water distribution systems shall be under the observation of the CONSTRUCTION MANAGER for the OWNER, either directly or through inspectors under his/her supervision.

- a. The CONSTRUCTION MANAGER shall enforce compliance with the approved plans and specifications.
- b. The CONSTRUCTION MANAGER shall have the authority to have the work discontinued in the event of noncompliance.
- c. No sewer or water connections shall be made to the appropriate street main whether tested or not, unless under the observation of the CONSTRUCTION MANAGER for the OWNER.

A temporary, leak-proof bulkhead-type plug shall be installed in the upstream (inlet) side of the manhole furthest downstream in any sewer main or branch under construction. The plug shall remain intact and unloosened until written permission is received from the CONSTRUCTION MANAGER to remove same.

- a. This permission will not be granted until each section of the sewer has been cleaned and flushed in a manner acceptable to the CONSTRUCTION MANAGER.

B. Testing

All sewers shall be subjected to either an infiltration, exfiltration or pressure test. Exfiltration tests shall be conducted in lieu of infiltration tests when the pipe has been laid above the groundwater level. The tests shall be performed between two manholes or as otherwise directed by the CONSTRUCTION MANAGER and shall include all related sewerage including house connections.

The CONTRACTOR shall furnish all labor, materials, and equipment necessary for the testing.

Exfiltration tests shall be under at least a four (4') foot head or a pressure corresponding to a head equal to the depth of the lower manhole of the section under the test.

An infiltration test shall be performed in the late winter or early spring following construction in the presence of the CONSTRUCTION MANAGER.

A pipe alignment test to include a lamp test and mandrel test must be performed in the presence of the CONSTRUCTION MANAGER.

Allowable infiltration or exfiltration shall not exceed a rate of 100 gallons per mile, per inch of diameter of sewer per 24 hours.

In order to ensure that there shall be no gushing or spurting streams entering the sewer, the CONTRACTOR shall be held responsible for water tightness of the line, shall satisfactorily repair all joints and other parts not sufficiently water tight and then shall make additional tests of the infiltration or exfiltration until the test results conform to the requirements given herein.

When individual connections are connected to sewer mains already tested, the individual connections shall be pressure tested prior to connection to the sewer main. Individual

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connections shall be pressure tested under a ten (10') foot head of water and shall be made tight from the point of connection at the main to the lowest cleanout in the building.

PART 4 – MEASUREMENT AND PAYMENT

4.01 Method of Measurement

- A. PVC pipe shall be measured by the linear foot. Trench excavation, bedding, backfill, compaction, density testing of compaction, trench and roadway restoration, disposal of unused or unsuitable material, and all else incidental for complete installation of sanitary sewer pipe shall not be measured for payment but shall be included in the price of PVC pipe.
- B. Connections to existing sanitary sewer manholes shall not be measured but shall be included in the various items of the proposal.
- C. Testing and video inspection of the completed system shall not be measured for payment but shall be included in the various items of the proposal.

4.02 Basis of Payment

- A. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
4" HDPE SANITARY SEWER	LINEAR FOOT

END OF SECTION

SECTION 02531 – DUPLEX GRINDER PUMP STATIONS

PART 1 – GENERAL

1.01 Description

- A Section includes:
 - 1. Duplex Grinder Pump Station
 - 2. Duplex Control Panel
 - 3. Installation, start-up, and testing of all equipment.

1.02 Quality Assurance

- A. Qualification of Manufacturer: Products used in the work of this section shall be produced by manufactures regularly engaged in the manufacture of similar items and with a history of successful production acceptable to the ENGINEER.
- B. Qualification of Installers: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods need for proper performance of the work of this section.

1.03 Submittals

- A. Shop Drawings: Before any of the materials of this Section are delivered to the job site, submit complete Shop Drawings.
- B. Materials List: Submit six (6) copies of a complete list of all materials and equipment proposed to be furnished and installed under this portion of work, giving manufacturer's name, catalog number and catalog cut for each item where applicable.
- C. Manufacturer's Recommendations: Accompanying the materials list, submit six (6) copies of the manufacturer's current recommended method of installation for materials provided.
- D. Certification that equipment provided is in accordance with design parameters.
- E. Six (6) copies of a complete wiring diagram and elementary diagram conductor and terminal identification as installed shall be delivered to the ENGINEER. In addition, a copy of wiring diagram shall be secured to the inside door/placed in door pocket of control panel enclosure.

1.04 Product Handling

- A. Protection: Use all means necessary to protect the materials of this section before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the ENGINEER and at no additional cost to the OWNER.
- C. Deliver materials in manufacturer's original packaging with all tags and labels intact and legible.
- D. Store and handle material in such a manner as to avoid damage, store at site undercover.

1.05 Job Conditions

- A. Protection: Use all means necessary to protect the materials of this section before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the ENGINEER and at no additional cost to the OWNER.

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PART 2 – PRODUCTS

2.01 Description

- A. The manufacturer shall furnish and deliver fully assembled grinder pump stations to the contractor or owner.
 - 1. One unit containing two pumps and all necessary parts and equipment shall be installed in fiberglass reinforced polyester tanks for outside installation.
 - 2. All equipment shall be factory installed except for externally mounted control panel, pumping unit, and gravity sewer inlet hubs which are to be installed in the field.
 - 3. **Stations are to be supplied by [Mid Atlantic Pump & Equipment Co.](#), 856-768-3880.**
- B. Each pre-assembled duplex station shall include the basin, basin cover, grinder pump and motor, quick disconnect rail system, check valve, junction box, start-stop level controls, motor high temperature shut-off, motor seal leak alarm, high water alarm, all internal wiring terminating into junction box, shutoff valve and Schedule 80 PVC discharge piping and fittings.
 - 1. In addition, an external alarm and pump control panel is to be provided for each unit.
- C. All units required for this project shall be of the same brand and be identical in all respects per horsepower ratings.

2.02 Equipment Description

A. PUMPS

1. Operating Conditions

Each grinder pump shall be of the centrifugal design and be capable of delivering a minimum of 30 GPM at 35 feet head. The shutoff head shall be no less than 60 feet.

2. Pump

The pump shall have an integrally built-in grinder unit and submersible type motor. The pump shall be suspended in the basin by two (2) 1" Stainless Steel guide rails and quick disconnect lift-out mounting assembly. Solids shall be fed in an up-flow direction to the grinder mechanism with no obstructions below the grinder inlet.

3. Grinder Assembly & Construction

The grinder unit shall be capable of cutting solid material found in normal domestic sewage.

- a. The grinder assembly shall consist of a rotating radial cutter and a stationary shredding ring, and shall be mounted directly below the volute passage.
- b. The rotating cutter shall be threaded onto the stainless-steel shaft and shall be locked with a screw and washer.
- c. The stationary shredding ring shall be pressed onto an iron holding flange for easy removal.
- d. The flange shall be provided with tapped back-off holes so that screws can be used to push the shredding ring from the housing.
- e. Both the radial cutter and shredding ring shall be removable from the outside without dismantling pump.
- f. Grinder assembly shall be of such construction that no clearance adjustments are required when assembling.
- g. All grinding of solids shall be from the action of the radial cutter against the shredding ring.

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- h. The radial cutter and shredding ring shall be of #440 stainless steel hardened to 58-60 Rockwell C.
4. Motor
- a. The pump motor(s) shall be of the submersible type rated for 2 horsepower at 3450 RPM. Motor shall be single phase, 230 volt, 60 Hertz.
 - b. Single phase motors shall be of the capacitor start-capacitor run type for high starting torque.
 - c. The stator winding shall be the open type with Class A insulation rated for 105 degree Celsius maximum operating temperature.
 - d. The winding housing will be filled with clean dielectric oil that will lubricate bearings, seals and transfer heat from the windings to the outer shell.
 - e. The motor stator is to be pressed into the motor housing for optimum concentricity and alignment, and maximum heat transfer. Pump motors without press fit housings will not be considered for this project.
 - f. The motor shall be capable of operating over full range of performance curve without overloading motor and causing any objectionable noise or vibration.
 - g. The motor shall have three bearings to support the rotor; an upper ball bearing to accommodate thrust loads, an intermediate ball bearing to take radial loads, and a sleeve bearing in the seal chamber to prevent shaft deflection at the lower seal from radial shock loading of the grinder impeller.
 - h. Ball bearings shall be designed for a LB-10 life (50,000 hours).
 - i. A heat sensor thermostat shall be attached to the top end of the motor windings and shall be connected in series with a holding relay in the control box to stop the motor if the motor winding temperature reaches 200 degrees Fahrenheit.
 - j. The high temperature shutoff will cause the pump to cease operation, should a control failure cause the pump to run in a dry wet well. The thermostat shall reset automatically when the motor cools to a safe operating temperature.
 - k. The common motor, pump and grinder shaft shall be of #416 stainless steel. The pump impeller and the grinder impeller shall thread onto shaft.
 - l. All motors shall be of domestic manufacture and shall incorporate US made materials including castings, windings, etc. **Motors not manufactured in the Continental United States will not be considered. Verifications of US manufacture including foundry certification shall be supplied to the engineer at his or her request.**
5. Power Cords
- a. Motor power cords shall be #14-4 type SOW/SOW-A, four conductors, while the motor control cord shall be #18-5 Type SO, five conductor.
 - b. Sufficient cord length shall be used so that the pump may be removed without disconnecting power and control wires from junction box.
 - c. Cord lengths shall be such that no splices will be required between the pump and junction box at top of basin.
 - d. In order to prevent possible wicking of moisture into the motor as a result of damaged cables, all leads from the power and control cords are to be potted into the motor end cap using a polyurethane type resin.
 - e. Power and control leads are to be non-wicking wire inside the motor end cap and connected to the pump cables by a compression type connector.

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- f. The pump lead and control wires shall also be held captive into the motor housing by a grommet and flange type compression fitting. The pump and control cords shall be able to withstand a minimum of 200-lb. pull without sacrificing the seal into the motor.
 - g. The end cap shall have female thread tapping for 1-1/2" conduit.
6. Seal Chamber
- a. The motor shall be protected by two (2) rotary shaft seals mounted in tandem with an oil filled chamber separating the seals.
 - b. The seals shall have carbon and ceramic seal faces diamond lapped to a tolerance of one light band. Metal parts and springs for seals shall be stainless steel.
 - c. An electrical sensing probe shall be mounted in the seal chamber to detect any water leakage past the lower seal. All pumping units shall have this dual seal arrangement. Units incorporating single seals or utilizing a lip seal arrangement will not be acceptable on this project.
7. Pump Impeller
- a. The pump impeller shall be of the recessed type to provide an open unobstructed passage through the volute for the ground solids.
 - b. Pumps may be required to operate at or near shut off head conditions. Recessed impellers are required to reduce the bearing loading and prolong pump life.
 - c. Pumps without recessed impellers will not be considered equal.
 - d. The impeller shall be constructed of stainless steel and shall have pump out vanes on the back side of the impeller to keep solids from lower seal and reduce pressure at the seal faces. Pumping units without stainless steel impellers will be unacceptable.
 - e. Impeller shall be threaded onto the stainless-steel shaft.
 - f. Grinder pumps having thermoplastic or non-metal impellers or pump volutes are specifically prohibited.
8. Pump & Motor Castings
- a. All iron casting shall be of high tensile cast iron and shall be properly cleaned, pre-treated with chromic rinse, and painted with high quality enamel paint.
 - b. All pump components that are not cast iron or stainless steel shall be galvanized or painted with baked on epoxy.
 - c. All fasteners shall be #302 stainless steel.
 - d. Grinder pumps utilizing air filled motors or foreign made steel will not be acceptable.
- B. FIBERGLASS BASIN ASSEMBLY
1. Basin
- a. The basin shall be 48" diameter and depth as shown on the plans. The basin shall be molded of fiberglass reinforced polyester resin manufactured by the lay-up and spray technique to assure that the interior surface is smooth and resin rich.
 - b. Twenty-five percent (25%) glass fibers shall be used and resin shall be POLYCOR 939-X-100 as manufactured by Cook Paint and Varnish Company or equal.

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- c. The basin shall have a minimum wall thickness of one-quarter inch (1/4"). The basin wall shall be designed to withstand a wall collapse based on the assumption of hydrostatic type loading by back-fill with a minimum density of 120 pounds per cubic foot.
 - d. The basin wall laminate shall be constructed to withstand or exceed two times the assumed loading for any depth of basin.
 - e. The basin bottom shall be sufficient thickness to withstand applicable hydrostatic uplift pressure with a safety factor of two. In saturated conditions, the center deflection of the empty basin bottom shall be less than 3/8" (elastic deflection) and shall not interfere with bottom pump mounting requirements.
 - f. Anti-flotation means shall be provided with each basin. A fiberglass anti-flotation collar shall be provided as an integral part of all stations 24" diameter or more; The anti-flotation collar shall extend a minimum of 3" beyond the O.D. of the basin wall.
 - g. Corrosion resistant nuts shall be embedded in the top flange of the basin for securing the basin cover. a minimum of six (6) shall be provided; the nuts shall be totally encapsulated in fiberglass to prevent turning and corrosion.
2. Basin Cover
- a. The cover shall be aluminum with a separate lockable access hatch for accessing the pumps via the guide rail system on all stations 48" in diameter or more..
 - b. The cover shall bolted to the basin with stainless steel cap screws. Cadmium plated nuts for the screws shall be embedded in the fiberglass to prevent turning and for corrosion resistance.
3. Shutoff Valve
- a. A PVC true union ball type shutoff valve with Teflon seats shall be furnished and installed in the discharge piping, as shown on the plans.
 - b. If the discharge depth is more than 2 feet from the surface, a handle extension shall be supplied.
4. Piping
- a. Schedule 80 PVC discharge piping shall connect to the stationary discharge base lift assembly and terminate at a (1-1/4", 1 1/2", 2") NPT stainless steel discharge flange mounted on the basin at the height shown on the drawing.
5. Rail Assembly
- a. Each lift-out system shall consist of a ductile iron discharge base, stainless steel pump guide plate and cast iron elbow/check valve. All exposed nuts, bolts, and fasteners shall be 300 series stainless steel.
 - b. Discharge elbow shall be 1 1/4" X 2" NPT and shall be integral to the base assembly.
 - c. The elbow/check valve shall be bolted to the pump. As simple downward sliding motion of the pump and guide plate on the guide rails shall cause the unit to be automatically connected and sealed to the base. A nitrile discharge flange seal shall be bolted between the pump and elbow/check valve. The discharge flange seal shall provide a leak proof seal at all operating pressures.
 - d. Two guide rail pipes shall be used to guide the pump from the surface to the discharge base connection.
 - e. The guide rails shall be 1" stainless steel pipe. The weight of the pump shall bear solely on the discharge base and not on the guide rails.

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- f. Rail systems which require the pump to be supported by legs which might interfere with the flow of solids into the pump suction will not be considered equal. The guide rail shall be firmly attached to the access hatch frame. Systems deeper than 15 feet shall require an intermediate guide for each 15 feet of wet well depth.
 - g. An adequate length of stainless steel lifting chain shall be supplied for removing the pump. The chain shall be of sufficient length and strength for easy removal.
6. Check Valve
- a. The lift-out check valve shall be of the ball type with a corrosion resistant neoprene ball. For servicing purposes the check valve shall be removable with the pump. Systems with check valves that are hard piped into the discharge line and are not accessible without getting into the station will not be permitted.
 - b. The ball shall be the only moving part and shall move automatically out of the path of flow, thus providing an unobstructed smooth flow through the valve body.
 - c. Upon pump shut-off the ball shall automatically roll to the closed position to provide a positive seal against back pressure or back flow. The check valve insert shall be stainless steel.
7. Ball Valve
- A PVC true union ball valve shall be included on the pump discharge line within the station, with capability of operation at the top of the station. A shutoff handle shall extend to within 6" to the top of the station that will be easily accessible for servicing the pump(s) if they have to be removed or tested.
8. Inlet Flange
- A basin inlet flange for 4" SCH 40 plastic pipe shall be included, but not mounted on the basin. The flange to be mounted in the field at inlet height required by the installation, or as shown on the drawing. The flange shall be furnished with a gasket to seal between the basin and flange and also include mounting bolts. A rubber transition type gasket shall be supplied to seal 4" SCH 40 PVC pipe into the basin hub.
- C. CONTROL PANEL
1. General
- a. Each duplex grinder pump panel shall control two 2 HP, 208 volt, 3 Phase, 60 Hertz grinder pumps. A "Neutral" wire shall be supplied to the panel for 120 VAC control panel.
 - b. The enclosure shall be NEMA 3R, or Nema 4X minimum 24" high, 24" wide, 6" deep, fabricated from hot dipped galvanized steel, painted gray with a stainless steel continuous hinge and provision for padlocking.
 - c. The back panel and hinged dead front shall be constructed of 5052-H32 corrosion resistant aluminum.
 - d. All mounting holes shall be drilled and tapped. Self-tapping metal screws shall not be used to mount any components. All bolts, nuts, washers, lockwashers, and machine screws shall be stainless steel.
 - e. The enclosure shall have external mounting feet to allow for wall mounting.
 - f. Dead front Construction- The dead front shall be held closed with two slotted nickel plated brass captive panel screws with knurled edges to allow for finger or screwdriver tightening. All components mounted to or protruding through the dead front shall be identified by labels mounted on the aluminum dead front face.
2. Component Description

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The following components shall be mounted through the dead front:

- 2 - Pump run indicator lights
- 2 - Hand-Off-Auto selector switches
- 2 - Two pole pump circuit breakers

The following components shall be mounted to the back panel:

- 1 - Set main line lugs (for incoming supply) except where main circuit breaker is supplied
- 2 - pump contactors
- 2 - Ambient-compensating overload relays
- 2 - Start capacitors sized to match motor requirements (for single phase pumps)
- 2 - Run capacitor sized to match motor requirements (for single phase pumps)
- 2 - Start relay sized to match motor requirements (for single phase pumps)
- 8 - Terminals for float connections
- 14 - Terminals for motor connections

3. Options

a. The following options shall be included:

- i. Alarm beacon, Red, mounted on top of the enclosure- The alarm beacon shall be NEMA 4X lexan. The bulb and socket shall be removable from the inside without the use of any tools.
- ii. Flasher-The flasher shall be solid state and totally encapsulated and shall flash the alarm beacon at a rate of approximately 60 flashes per minute.
- iii. Seal failure module with indicator light for each pump-Seal failure modules shall be installed on the back panel to detect motor seal failure. The modules shall energize the dead front mounted "Seal Failure" lights when the resistance across the probes drops to approximately 50,000 ohms or less.
- iv. Motor overtemperature indicator light for each pump on dead front-Motor overtemperature indicator lights shall be installed on the dead front to indicate a motor overtemperature condition. Either pump shall stop on overtemperature and restart automatically when the overtemperature condition clears itself.

D. LEVEL CONTROLS, ALARMS SWITCHES, JUNCTION BOX

1. Level Controls

- a. Four mercury tube float switches shall control pump on and off levels.
- b. The mercury switch shall be sealed in a solid polyurethane float ball. The support wire shall be 16-2 SJOW (neoprene jacket) and weight shall be attached to the cord above the float to hold the switch in place in the sump.
- c. The level control switches shall be red in color.
- d. The high water alarm switch shall be the same as the level control switch, except a built-in stabilization weight shall be supplied instead of an external weight and the switch shall be colored orange.
- e. The level controls shall be supported in the sump by a bracket and cord snubber which will give positive support to the controls and allow flexibility in the set levels.

2. Junction Box

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- a. The junction box shall be constructed of fiberglass for corrosion resistance, stability and mechanical strength.
- b. The enclosure shall be of adequate thickness and properly reinforced to provide good mechanical strength.
- c. The junction box shall have a fully gasketed cover that is held in place by four (4) captive stainless steel screws that can not be removed from the cover, with heads totally encapsulated in PVC so that no metal parts are exposed.
- d. The screw heads shall be of adequate size so that they may easily be installed and removed without the use of special tools.
- e. The cover shall be fastened to the main body of the junction box by means of a totally corrosion resistant tether, to prevent dropping the cover into the basin during service.
- f. An adequate number of sealing type cord grips shall be supplied for incoming pump and switch cords. The cord grips shall be made of non-corrosive material, such as PVC or nylon, and shall make an effective seal around the wire jacket. The cord grip shall also seal to the junction box wall with "O" ring, gasket, or other effective means.
- g. The junction box shall have a PVC solvent weld socket type conduit hub mounted in the bottom of the enclosure. The hub shall be of a corrosion resistant material and shall be of adequate size to accommodate the number of wires required to operate the pump.
- h. The interior of the enclosure shall be of adequate size to accommodate the wires and connections required to operate the pump.
- i. The junction box shall be designed to NEMA 6 standards for occasional submergence.

PART 3 – EXECUTION

3.01 Manufacturer's Warranty

- A. The manufacturer of the pump station shall warrant it to be free from defects in materials and workmanship for one year after start up of the station.

3.02 Approved Suppliers

- A. Manufacturers listed below do not constitute approval. All duplex pump stations must have the capabilities and functions as outlined above.
- B. Pump Station will comply with all specifications above. Station to be supplied by Mid Atlantic Pump & Equipment Company (856-768-3880)

PART 4 – MEASUREMENT AND PAYMENT

4.01 Method of Measurement

- A. Excavation, bedding, backfill, compaction, density testing of compaction, trench and roadway restoration, disposal of unused or unsuitable material, all above-mentioned components and equipment, and all else incidental for complete installation of the grinder pump station shall not be measured for payment but shall be included in the price of the grinder pump station.
- B. Grinder Pump Station shall be measured by the unit. This item shall include all work and materials associated with the furnishing and installation of the station.

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4.02 Basis of Payment

A. Payment will be made under:

<i>Pay Item</i>	<i>Pay Unit</i>
GRINDER PUMP STATION	LUMP SUM

SECTION 02511 – WATER MAINS

PART 1 – GENERAL

1.1 Work Included

- A. Provide all labor, superintendence, materials, tools, transportation, plant equipment and all means of construction necessary and reasonably incidental to the complete and full replacement of potable water main piping and associated appurtenances as authorized and directed by the OWNER or CONSTRUCTION MANAGER under this Contract and as specified herein.
- B. All materials and labor obviously a part of the work, and as necessary for proper installation and/or operation of same, although not specifically indicated in the Contract Documents and/or in the specifications shall be provided by the CONTRACTOR as if called in detail without additional cost to the OWNER.
- C. All materials installed will be inspected by the OWNER/CONSTRUCTION MANAGER. All material that fails to pass inspection shall be repaired or replaced to the satisfaction of the CONSTRUCTION MANAGER at no additional cost to the OWNER. Inspection shall then be repeated until satisfactory results are achieved.
- D. Disruption of existing water service shall be kept to a minimum. Water service to households and fire hydrants shall be maintained until new water main is tested and disinfected in accordance with these specifications.

PART 2 – PRODUCTS

2.1 Materials

- A. Pipe and Fittings

Pipe material to be used in construction of water mains shall be Type “K” copper pipe.

Ductile iron pipe, appurtenances, and fittings shall comply with ANSI/AWWA C110/21.10 (fittings), C111/A21.11 (gasket joints), C115/A21.15 (flanged joints), and C151/A21.51 (pipe). Thickness shall be designed in accordance with ANSI/AWWA C150/21.50.

Water mains shall be ductile iron, minimum class 52, cement lined, push on Tyton “0” ring gaskets or mechanical joint, conforming to AWWA C-151, AWWA C-104, and AWWA C-111. Pipe push on Tyton “0” ring gaskets or mechanical joint in compliance with ASTM 3139.

Ductile Iron cement lined pipe shall conform to the requirements of the ANSI specification A21.51 as amended and revised to date. “Tyton” joints shall conform to the ANSI specification A21.11 as amended and revised to date.

The exterior of the ductile iron pipe shall be cover with an asphaltic, epoxy-type coating. In aggressive soils, the outside of all pipe and fittings shall be wrapped in Polyethylene encasement for corrosion protection and the inside of the pipe shall be lined with cement and bituminous seal in accordance with the American Standard Specifications for cement mortar lining for cast iron pipe fittings, ANSI A21.4 (AWWA C-104).

Fittings shall be Type “K” copper mechanical joint with Meg-a-Lug retaining flanges or approved equal.

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B. Valves

1. Gate Valves

Gates valves shall be AWWA resilient seated non-rising stem type with valve box, Mueller Company or equal, conforming to the latest AWWA Standard for Gate Valves - 3 in. through 48 in. - for Water and Other Liquids, AWWA Designation C-509. Sizes up to and including 12" shall be 200 PSI working pressure; 16" shall be 150 PSI working pressure. The valves must have "O" ring seals, inside screw and parallel seats and be so constructed that they will give an unobstructed passage of at least the full pipe area. They shall be perfectly tight when closed. The ends of the valves shall correspond in type and dimension with those of the pipe. All valves shall be arranged to open in counter clockwise direction unless otherwise indicated on the drawings and operating nuts shall be 2" square. The direction of opening shall be marked on the nut by an arrow and the word "OPEN". The valves shall be tested to a pressure of not less than 400 lbs. per square inch. All buried valves shall be furnished with standard weight cast iron valve boxes. Boxes shall be cast iron of the Mueller Company Sliding type or equal with round or oval base and deep cover to prevent tipping and shall be suitably marked with the word "WATER". Sections shall not be less than 5-1/4" in diameter. Lengths shall be suitable for locations intended. Valve boxes shall be complete with covers and both valve box and cover shall be of ample strength and dimension to fully sustain the shocks of heavy vehicular traffic and to maintain the upper section and cover at proper grade under heavy vehicular traffic. Two, 2" square nut operating wrenches of suitable lengths shall be provided.

Valves shall be American-80 "CRS" Resilient, Epoxy-lined Gate Valve as manufactured by American Valve and Hydrant Co., Mueller 2360 Series as manufactured by the Mueller Company, or approved equal. Thin walled or reduced wall valves will not be deemed an equal. A valve shall be installed on each side of a tee or cross fitting.

Valves shall be supported with concrete block and installed with retaining flanges.

D. Water Services

Type "K" copper, flared, or Mueller Corporation type, underground type shall be used up to and including one inch (1") in diameter. For 1 1/2" to 2" services, copper or copper sized black poly pipe with S.S. inserts with Mueller compression fittings to be used.

For services over two inches (2"), ductile iron cement lined pipe class 52 shall be used.

Service from the water main to the curb stop, and the property, shall be one piece and be laid in a straight line at right angles to the curb line, within the building limits of the structure to be served, and shall be at least four feet (4') below the surface of the ground, when final grading has been computed. The minimum separation between the service and sanitary sewer shall be five feet (5') minimum at the shutoff/cleanout location. The lot width shall be designed accordingly to accommodate this separation as well as three feet (3') from property line and driveway width.

No water service line shall be laid in same trench with gas pipe, sanitary sewer lateral, or any other facility or any public service company, nor within three (3') feet of any open excavation, vault, cesspool or septic tank; nor shall the location be in conflict with any sidewalk or driveway or be subject to vehicular traffic.

All services must be tapped at water main Mueller Corporation Type H 15000 (3/4" through 2") or approved equal. Taps must be located at 10:00 or 2:00. Ball curb valve to be Mueller 300.

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The water main shall be tested after installation of water services.

All fittings must be Mueller or Ford, flared type or Mueller Compression type.

Curb box to be marked with a "W" saw cut on top of curb.

E. Thrust Blocks

All bends in the water main must have 4,000 psi concrete thrust blocks.

Concrete must be cured for at least seven (7) days prior to the water main being filled and pressurized.

Where concrete thrust blocks have been cast with high early strength concrete, the water main can be filled after thirty-six (36) hours.

F. Wet Taps, Tapping Sleeves & Valves

All wet taps must be installed with mechanical joint tapping sleeves manufactured by Waterous Series 2800, Mueller H-615, US Pipe Model T-9, or approved equal.

CONTRACTOR must have wet tap sleeve approved by the DTMUA ENGINEER 48 hours prior to construction. Shop drawing shall be submitted for approval.

Tapping sleeves shall be extra heavy pattern of the sizes suitable for use on the pipe on which the respective sleeve is to be installed and for use with the tapping valves. They shall be designed for a working pressure of 200 PSI. and the same manufacturer as the tapping valves. Cast iron tapping sleeves shall be as manufactured by Mueller Company or equal.

G. Pipe Crossing

Where water main crosses with any storm sewer, sanitary sewer, or force main, there must be eighteen inches (18") of clearance between lines. In no case can the pipe have less than twelve inches (12") of clearance. However, where less than 18" of vertical clearance is provided the water main shall be constructed with flange pipe and tie-rodged for a distance of not less than 10' in each direction of the crossing and Meg-A-Lug restraints shall be used to connect to proposed water main piping.

Where water main crosses under any sanitary sewer or force main it must be encased with concrete ten feet (10') in each direction.

H. Broken Stone

Unless otherwise approved by the OWNER, broken stone shall be installed as bedding for all piping, valves and hydrants. Broken stone shall be nominal ¾" size and shall be installed a minimum of 6" thick under ductile iron piping.

I. Backfill Material

Material for backfill may consist of run of the bank sand and gravel containing not more than two percent (2%) elutriable clay.

J. Road Material

1. Stone and Gravel

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Stone for base course shall conform to New Jersey Department of Transportation Standards for Broken Stone and be of the size known commercially as 1-½" Quarry Blend, of which 100% shall pass a 2-¼" screen with round openings. Not less than 20% nor more than 30% shall pass a #4 sieve, and not more than 10% shall pass #200 sieve.

Gravel for base course shall be placed at the grade and contour shown on the drawings. Gravel shall be Type 2, Class A or Class B.

2. Bituminous Concrete

For temporary surfacing, the commercial mixtures of Bituminous Concrete known as Cold Patch may be used. The final surfacing shall be done with bituminous concrete Type FABC, mixed in accordance with applicable Standards of the New Jersey Department of Transportation and as shown on the Roadway Construction Plans contained in the Contract Documents.

3. Concrete

Concrete for gutter, curb, sidewalk, and drives shall have a 28 day strength of 4,500 psi, shall match the color of the existing concrete as nearly as possible and shall be finished so that the surface texture matches the original.

K. Retaining Flanges

All fittings, bends, valves, fire hydrants, and sleeves must be installed with Meg-a-Lug or approved equal retaining flanges.

L. Miscellaneous

Bell type repair clamps are not permitted to repair leaks. A solid sleeve must be installed.

Where new C.L.D.I.P. is joined with asbestos cement pipe, a Dresser HYMAX coupler as manufactured by Total Piping Solutions, Inc., or approved equal, transition coupling must be installed.

Insertion valves and line stops shall be performed using the Hydra-Stop and Insta-Valve systems by ADS, LLC, or approved equal.

PART 3 – EXECUTION

3.1 Installation – General

All materials shall be installed in accordance with the Construction Documents and per manufacturer's instructions and recommendations.

All work shall be completed by workmen skilled in their trade.

3.2 Construction

A. Piling of Materials

All materials shall be neatly piled, and the excavated material shall be banked on one side of the trench and stabilized to leave a clear footway of two feet between the bank and the trench to create as little inconvenience to owners of neighboring properties and to the public as possible. Gutters, driveways and street crossings must be kept clear, except

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when the latter are unavoidably obstructed by the open trench.

B. Precautions

All excavations, embankments, materials, rubbish and heaps of other obstacles incident to the work must be enclosed with barricades and well-lit to prevent accidents. Special precautions must be taken to secure buildings and property near the excavation. All ordinances relating to such precautions and the safeguards must be faithfully observed by the CONTRACTOR, as he shall be held personally amenable for any disregard or violation of them by his employees or agent.

C. Pipe Bedding and Trenching

The minimum depth of cover shall be four feet (4') from the top of the pipe to the finished grade.

The trench shall be dug to the required depth and alignment shown on the plans. The trench shall be braced and drained when necessary, so that workmen may work therein safely and efficiently.

The trench width at the ground surface may vary with and depend upon its depth and the nature of the ground encountered. Unless otherwise authorized by the DTMUA ENGINEER in writing, the trench width shall be ample to permit proper installation of the pipe or accessories and proper placing and compacting of backfill. Unless otherwise authorized by the DTMUA ENGINEER, the minimum clear width of sheeted or unsheeted trench shall be 18 inches (18") or one foot greater than the outside diameter of the barrel of the pipe, whichever is greater, and maximum width of trench at the top of the pipe shall not be greater than the outside diameter of the barrel of the pipe plus two feet.

In cases where use of special equipment designed to cut narrow trenches is permitted in writing by the DTMUA ENGINEER, precaution shall be exercised to insure bearing for the full length of the barrel of the pipe.

The trench, unless otherwise specified, shall have a flat bottom conforming to the grade to which the pipe is to be laid. The pipe shall be laid upon sound soil cut true and even, so that the barrel of the pipe will have a bearing for its full length. When any part of the trench is excavated below grade by the CONTRACTOR's inadvertence or where, in the opinion of the DTMUA ENGINEER, the use of a machine excavator has rendered unfit an otherwise suitable bottom, the trench shall be corrected with approved material, thoroughly compacted. When the bottom material uncovered at sub-grade is soft and in the opinion of the DTMUA ENGINEER, cannot support the pipe, further depth and/or width shall be excavated and refilled to pipe foundation grade as required.

Ledge rock, boulders and large stones shall be removed to provide a clearance of at least six inches below all parts of the pipe, valves or fittings. Excavations below grade in rock or in boulders shall be refilled to grade with choked stone no larger than one inch in size, thoroughly compacted to provide support for the pipe.

Wherever necessary to prevent caving, the trench shall be adequately sheeted and braced. The sheeting shall remain in place until the pipe has been laid and the earth around it compacted to a minimum depth of two feet (2') over the top of the pipe.

All pipe and accessories shall be carefully lowered into the trench pieces by piece in such a manner as to prevent damage. Under no circumstances shall the pipe and accessories be dropped or dumped into the trench.

Every precaution shall be taken to prevent foreign material from entering the pipe. During

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laying operations no debris, tools, clothing or other material shall be placed in the pipe.

At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means satisfactory to DTMUA ENGINEER.

Whenever it is necessary to deflect pipe from a straight line either in a vertical or horizontal plane, the amount of deflection in each joint shall not exceed four degrees.

Where groundwater is encountered, a six inch (6") thick $\frac{3}{4}$ " clean crushed stone bed must be provided.

D. Setting Fittings

Reaction or thrust backing shall be placed at bends and tees, and where changes in pipe diameter occur at reducer or in fittings. The size and shape of concrete thrust backing shall be as indicated on the appended detail sheet.

Reaction or thrust backing shall be placed at plugs and caps unless another method of restraint shall be directed by the DTMUA ENGINEER.

Reaction or thrust backing shall be or a concrete mix not leaner than 1 cement, 2- $\frac{1}{2}$ sand, 5 stone, having compressive strength of not less than 4,000 psi at 28 days when using standard cement. Backing shall be placed between solid ground and the fitting. The backing shall be placed so that the pipe and fitting joints will be accessible for repair unless otherwise directed by the DTMUA ENGINEER.

Valve boxes shall be firmly supported and maintained centered and plumb over the operating nut or the valve, with box cover flush with the surface of the finished pavement or at such other level as may be directed by the DTMUA ENGINEER.

Hydrants shall be placed in locations designated on the drawings. When placed behind curbs the hydrant shall be set so that no portion of the hydrant on the street side is less than six inches (6") or more than twelve inches (12") from the vertical faces of the curb, unless otherwise directed by the DTMUA ENGINEER.

Whenever directed by the DTMUA ENGINEER, a drainage pit two feet (2') in diameter and two feet (2') deep shall be excavated below each hydrant. The pit shall be filled compactly with coarse gravel or broken stone mixed with coarse sand, under and around the base of the hydrant to a level six inches (6") above the waste opening. No hydrant drainage pit shall be connected to a sewer.

A reaction or thrust backing shall be provided at the base of each hydrant and shall be provided at the base of each hydrant and shall not obstruct the drainage outlet of the hydrant, or the base of the hydrant shall be tied to the pipe line as directed by the DTMUA ENGINEER.

E. Inspection of Water System

All construction of water systems shall be under the jurisdiction of the OWNER's CONSTRUCTION MANAGER either directly or through inspectors under his supervision. He shall enforce compliance with the approved plans and specifications. He shall have the authority to stop work in the event of non-compliance.

The CONTRACTOR shall give 48 hours notice to the OWNER prior to construction of water systems at all times during the construction period for the project. Should any water construction be performed wherein a qualified inspector is absent due to the CONTRACTOR's failure to provide the proper notification, the OWNER may require said

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work to be uncovered at the CONTRACTOR's expense. Failure to do so may result in non-acceptance of the work.

F. Testing of Completed Water System

1. Pressure & Leakage Test

All pipe lines shall be pressure and leakage tested prior to construction of permanent pavement repair, a minimum of seven days after the last concrete thrust block has been cast if constructed with normal Portland cement. All materials and equipment required for testing shall be supplied by the CONTRACTOR. Pressure tests shall be performed after the placement of backfill and asphalt base course.

Hydrostatic testing of ductile iron pipe shall conform to AWWA Standard C-600 Section 13.

The pressure test shall be performed by increasing the hydrostatic pressure to 150 psi and maintaining the pressure for a period of two (2) hours. Any pipe, fittings, or valves found defective shall be replaced. Prior to performing the test, all air pockets and bubbles must be eliminated.

The leakage test shall be performed after the pressure test has been satisfactorily completed and shall be accomplished by increasing the hydrostatic pressure to a specified value and maintaining that pressure for a period of two hours. Leakage is the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof to maintain the specified leakage test pressure after the air in the pipeline has been expelled. The hydrostatic pressure for the leakage test shall be 150 psi. The leakage from each portion of the pipeline being tested shall not exceed 25 gallons per inch of internal diameter per mile of pipe per day for ductile iron or polyvinyl chloride pipe. If any test of pipe laid discloses a greater leakage than specified, the CONTRACTOR shall, at his own expense, located repair the defective joints until the leakage within the specified allowance.

2. Bacteria Test

After flushing has been completed and the free chlorine residual is not greater than 0.5 PPM, a bacteriological sample shall be taken in accordance with the New Jersey Department of Environmental Protection Agency, Potable Water Standards, Bulletin PW-10, December 1970.

Copies of the analysis must be sent to the CONSTRUCTION MANAGER directly from a New Jersey DEP certified laboratory.

G. Disinfection

All pipelines shall be disinfected in conformance with AWWA Standard C-651 for disinfection of water mains prior to being put into service. Hypochlorite and liquid for use in disinfection shall conform to AWWA Standards B-300 and B-301, respectively.

All pipelines shall be thoroughly flushed before introduction of chlorinating materials which shall be done in an approved manner. The amount of chlorine shall be such as to provide a dosage of not less than 50 parts per million. The chlorinated water shall be retained in the main for at least 24 hours during which time all hydrants and valves in the section treated shall contain no less than 25 parts per million chlorine throughout the length of the main. The heavily chlorinated water shall be operated through valves and hydrants in order for them to be disinfected. At the end of the 24-hour period, the treated water shall then be

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flushed from the main until the chlorine concentration in the water leaving the main is no higher than generally prevailing in the system. The CONTRACTOR shall then have samples taken by an approved testing laboratory and bacteriological analysis made. Should the initial treatment prove ineffective, disinfection shall be repeated until satisfactory samples have been obtained.

H. Pressure Grout for Existing Water Main

All existing water main piping to be abandoned shall be completely filled with a cement grout mixture via pressure grouting or an alternate approved method. A shop drawing shall be submitted to the CONSTRUCTION MANAGER outlining the methodology of grouting as well as identifying the type of cement grout to be used to fill the pipe.

I. Backfill and Clean Up

Selected backfill material approved by the DTMUA ENGINEER, unfrozen and free from rock, large stones, boulders or other unsuitable substances, shall be deposited in the trench uniformly on both sides of the pipe for the full width of the trench. This backfill material shall be tamped in four inch (4") layers and shall be sufficiently damp to permit thorough compaction under and on each side of the pipe to provide support free from voids to a cover of twelve inches (12") over the barrel of the pipe. After the pipe barrel has a twelve inch (12") cover fully compacted, the backfill shall be placed in layers not exceeding eight inches (8") until the entire trench is backfilled. No layer shall be placed until the prior layer is thoroughly and fully compacted.

The CONTRACTOR shall restore and/or replace paving, curbing, sidewalks, gutters, shrubbery, fences, sod or other disturbed surfaces or structures to a condition equal to that before the work began to the satisfaction of the CONSTRUCTION MANAGER.

In paved streets or roads, the edges of the paved areas to be excavated shall be cut vertically with an approved cutting tool prior to the excavation of the trench. At the end of each work day temporary paving shall be installed on all trenches excavated during the day in all residential, commercial and industrial areas, as well as any main thoroughfares, as required by governmental regulations, as necessary to protect persons and property and to the satisfaction of the CONSTRUCTION MANAGER.

All existing lawn areas shall be restored with sod unless otherwise specified by the CONSTRUCTION MANAGER.

Tools, temporary structures, and rubbish shall be removed by the CONTRACTOR and the construction site shall be left clean to the satisfaction of the CONSTRUCTION MANAGER. Any excess dirt shall be swept up and removed from the developed areas, and the construction site shall be left with a neat and clean appearance to the satisfaction of the CONSTRUCTION MANAGER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 Method of Measurement

- A. Pipe Bends of the various diameters shall be measured by the unit. Concrete Thrust Blocks shall not be measured for payment but shall be included in the various items of the proposal.
- B. Water Service, 2" shall be measured on a unit basis. Excavation, trench restoration, backfill, import fill material, the required length of service piping, connection to existing

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water main shall not be measured for payment but shall be included in the various items of the proposal.

- C. Reset Water Valve Box shall be measured on a unit basis. Excavation, backfill, restoration, shall not be measured for payment but shall be included in the various items of the proposal.
- D. Pressure Test, Leakage Test and Bacteria Test shall not be measured but shall be included in the various items of the proposal.
- E. Disinfection of the pipelines shall not be measured but shall be included in the various items of the proposal.
- F. Connections to existing water main shall not be measured but shall be included in the various items of the proposal.
- G. Backfill, Trench Restoration, and Cleanup shall not be measured but shall be included in the various items of the proposal.

4.02 Basis of Payment

- A. Payment will be made under

<i>Pay Item</i>	<i>Pay Unit</i>
2" COPPER WATER SERVICE	UNIT

END OF SECTION