PROJECT MANUAL

INCLUDING BIDDING AND CONTRACT REQUIREMENTS AND SPECIFICATIONS
FOR

CONTRACT NO. 1 - GENERAL CONSTRUCTION

FOR

MERCER COUNTY AGRICULTURAL AND CONSERVATION COMMUNITY LEARNING CENTER AT MUNNELL RUN FARM

41 MUNNELL RUN LANE
MERCER, PA 16137

FOR THE

MERCER COUNTY COMMISSIONERS

125 SOUTH DIAMOND STREET
MERCER, PA 16137

ENGINEERS HHSDR ARCHITECTS

40 SHENANGO AVENUE
SHARON, PA 16146
PHONE (724) 981-8820

201 CENTURY BUILDING, 130 7TH STREET
PITTSBURGH, PA 15222
PHONE (412) 281-2280

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MAY 29, 2026 COMMISSION NUMBER 4826

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MERCER COUNTY AGRICULTURAL AND
CONSERVATION COMMUNITY
LEARNING CENTER AT
MUNNELL RUN FARM
41 MUNNELL RUN LANE
MERCER, PA 16137

FOR THE
MERCER COUNTY COMMISSIONERS
125 SOUTH DIAMOND STREET
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REFER TO DRAWING SHEET CS-1 FOR LIST OF DRAWINGS

END OF SECTION 000115

SECTION 001000 - ADVERTISEMENT

ADVERTISEMENT
MERCER COUNTY
Munnell Run Farm
Agricultural and Conservation Community Learning Center

The County of Mercer is requesting sealed written bids for the Agricultural and Conservation Community Learning Center at Munnell Run Farm, 41 Munnell Run Lane, Mercer, PA 16137.

Bids must conform with the Contract Documents as provided by the County. Bid forms, bid instructions, bid specifications, and the scope of work can be obtained on the County's website at https://www.mercercountypa.gov/rfp/

A pre-bid meeting will take place at the site at Munnell Run Farm, 41 Munnell Run Lane, Mercer, PA 16137 on Thursday, June 18 at 10:00 a.m., at which time prospective bidders may inspect the premises and questions will be answered regarding the scope of work, bidding requirements, and Contract documents.

It is the intent of the County to enter into separate contracts as follows: Contract No.1 -General Construction, Contract No. 2 - HVAC Construction, Contract No. 3 - Plumbing Construction, Contract No. 4 - Electrical Construction.

Pennsylvania Prevailing Wage Rates apply to this Project.

Note, this Project is funded in part by a grant through the ARPA CPF MPCFP, Contract #C000090918. Contractors must follow all applicable federal, state and local laws and regulations, and program guidelines specified in the Contract Documents and the Commonwealth of Pennsylvania.

Bids must be submitted in a sealed envelope, marked "Mercer County Agricultural and Conservation Community Learning Center" as well as the Name of the Bidder, Contract Name and Number and received by Mercer County Controller, Stephen J. Sherman II, at the Mercer County Courthouse, 125 S. Diamond Street, Suite 2, Mercer, PA 16137 by 1:00 p.m. on Thursday, July 2, 2026.

All bids must be accompanied by a certified check or bid bond made payable to the County of Mercer in the amount of 10% of the bid.

Any questions should be directed to HHSDR Architects/Engineers at 40 Shenango Avenue, Sharon, PA 16146, 724-981-8820.

Bids will be opened at the public Commissioners' Meeting at 3:00 p.m., on Thursday, July 2, 2026, in the Mercer County Courthouse, 125 S. Diamond Street, Mercer, PA 16137. It is anticipated that the bid will be awarded at the public Commissioners' Special Meeting scheduled for 3:00 p.m., on Thursday, July 9, 2026, in the Mercer County Courthouse.

Bids must be firm for thirty (30) days following the opening of bids on July 2, 2026. The successful bidder must enter into a contract with the County of Mercer within ten (10) days following notice of the bid award to provide the specified services.

The Mercer County Board of Commissioners reserves the right to reject any and all bids, to waive any informality in the bids, and to award the bid in the best interest of the taxpayers, to the lowest responsible bidder.

MERCER COUNTY BOARD OF COMMISSIONERS
Ann Coleman, Chair
William Finley, Jr.
Timothy M. McGonigle

END OF SECTION 001000

SECTION 002000 - INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.01 INVITATIONS FOR BIDS

A. Sealed bids for Mercer County Agricultural and Conservation Community Learning Center at Munnell Run Farm, 41 Munnell Run Lane, Mercer, PA 16137, for the Mercer County Board of Commissioners, will be received to the attention of Mercer County Controller, Stephen J. Sherman II, at the Mercer County Courthouse, 125 S. Diamond Street, Suite 2, Mercer, PA 16137, Attention: Mercer County Board of Commissioners, until **1:00 PM**, local time, **Thursday, July 2, 2026**.

B. A Pre-bid Conference will be held at the site on **Thursday, June 18, 2026, at 10:00 AM**. The purpose of the meeting will be to review the scope of the proposed project and clarify any items in the Contract Documents.

1.02 OPENING OF BIDS

A. Sealed bids will be publicly opened and read at a meeting in the Mercer County Board of Commissioners Assembly Room on **Thursday, July 2, 2026, at 3:00 PM** prevailing time, at the Mercer County Courthouse, Mercer, PA.

1.03 CONTRACTS

A. It is the intent of the Owner to enter into separate contracts as follows:
Contract No. 1 General Construction.
Contract No. 2 HVAC Construction.
Contract No. 3 Plumbing Construction.
Contract No. 4 Electrical Construction.

B. The Owner may enter into other separate contracts at this or later dates.

1.04 PLANS

A. Contract Documents were prepared by HHSDR Architects and Engineers, 40 Shenango Avenue, Sharon, PA, 16146 (724) 981-8820, and 201 Century Building, 130 Seventh Street, Pittsburgh, PA, 15222 (412) 281-2280.

B. Contract Documents can be obtained on Mercer County's website at https://www.mercercountypa.gov/rfp/.

C. Addenda will be posted to Mercer County's website.

D. The only electronic format Contract Documents will be available in is portable document format (pdf); Contract Documents will not be available in any of these electronic formats AutoCAD, Microsoft Word, Excel, etc.

1.05 BIDDER'S QUALIFICATIONS

A. Each Bidder shall be prepared, if so requested, to present evidence of the Bidder's experience,

qualifications and financial ability to carry out the work in accordance with the terms of the Agreement, within twenty-four (24) hours of the bid opening. Bidder's qualifications, if so requested, shall be submitted as outlined in Section 004513 - Bidder's Proof of Competency.

1.06 BID SECURITY

A. Each bid must be accompanied by a Bid Security Bond, payable to the County of Mercer in an amount of not less than **ten percent (10%)** of the bid (including Base Bid and all Add Alternate Bids).

B. Such Bid Security Bond shall be submitted with the understanding that it shall guarantee that the Bidder's Bid will not be withdrawn for a period of at least **thirty (30)** days after the scheduled closing time for receipt of bids; that if the Bid is accepted, the Bidder will execute the Form of Agreement, as provided by the Owner, with all blanks appropriately filled and will submit the required 100% Performance and Labor and Material Bonds (submitted on A.I.A. Document A312) and 100% Maintenance Bond as specified in Section 007316 Insurance Requirements; and that in the event of withdrawal of said Bid within said period, or the failure to enter into said Agreement and submit said Bonds within ten days after the Bidder has received notice of the acceptance of the Bid, the Bidder shall be liable to the above mentioned Owner for the full amount of such Bond as representing the damage to the Owner on account of the default of the Bidder in any particular hereof. The Bid Bond of all Bidders whose Bids are not accepted will be returned within ten calendar days after the scheduled bid opening date.

1. Contractor's withdrawal of Bid:
    a. A bidder may only withdraw a bid if there is an honest and good-faith mistake (which must be supported by evidence) in the calculation of the bid price. A bidder has two business days from bid opening to withdraw a bid.
    b. The Owner reserves the right to accept or decline the Contractor's Withdrawal of Bid Request and reserves the right to retain the bid bond.
    c. A bidder who withdraws a bid will not be permitted to bid on the project a second time (should it be rebid) or provide any work or materials to the project.
    d. If the Owner chooses to rebid the project, the bid bond of the withdrawing bidder will be forfeited to the Owner to supplement the rebid costs.

1.07 FAMILIARITY WITH PROPOSED WORK

A. Contracts will be awarded with the understanding that the Contractor, prior to submission of bid, has become acquainted with the requirements of the Contract Documents, including those of other Prime Contractors, condition of the site, the building (interior spaces, exterior envelope), terrain, soil conditions, all utilities in existence (including those to which connections are to be made), all other conditions of the Contract and has obtained all information necessary for completion of the work on or before the date specified and shall assume all risks resulting from any changes in the conditions which may occur during the progress of the work.

1. Site Visitation: Bidders are required to attest to the fact that they have visited the site with the submittal of their Bid Form, Section 004116.
2. Site Visitations: Contact Jay Russell, District Manager, Mercer County Conservation District, 724-662-2242 ext.2391, jrussell@mercercountypa.gov, to schedule a site visitation.

B. It is the intent of the Architect and Engineer to fully clarify all conditions of the Contract Documents. It is, therefore, highly recommended that all Bidders contact the Architect and Engineer to discuss any items in question during the bidding period so that any questionable item can be resolved, and if required, Addenda may be issued prior to submission of bids.

1. Manufacturers, suppliers, and sales representatives are not to contact the Owner during bidding

to discuss their products.

C. The Owner and Architect are relying upon the Bidders site investigation to adequately price the work for the purpose of avoiding claims that the Contract Documents provided contain insufficient information regarding existing conditions or that the Bidder incorrectly assumed the existing conditions. The Contractor shall not at any time after submission of its Bid make any claim based on insufficient information or incorrectly assumed conditions that should have been discovered by the Bidder's site investigation. Nor shall the Contractor claim any misunderstanding in regard to the nature, conditions, or character of the work to be done under the Contract.

D. Bidders are responsible for providing all equipment, and the means, necessary to investigate the existing conditions prior to submitting their Bids.

1.08 REGULATIONS

A. The law of the place of building shall govern the construction of this Contract, which is the Pennsylvania Uniform Construction Code (PA UCC). Codes and Standards enforced under the UCC: the 2021 International Codes issued by the International Code Council (ICC), including accessibility provisions in Chapter 11 and Appendix E, ANSI A117.1.

B. The general prevailing minimum wage rates, as determined by the Pennsylvania Department of Labor and Industry, Bureau of Labor Law Compliance for Prevailing Minimum Wage Predeterminations, shall be paid for each craft or classification of all workers needed to perform the Contract during the anticipated term thereof, refer to Section 007343 for the rates as issued for this Project.

C. The Contractor shall contact the local authorities regarding any requirements for Contractor licenses and/or bonding, and any ordinances which may restrict early morning, late evening, and/or weekend work hours, as well as any restrictions regarding access routes to the site.

D. The Bidder's attention is directed to the fact that all applicable Federal and State laws, municipal ordinances and codes, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they are deemed to be included in the Contract the same as though herein written in full. Section 007216 General Conditions Article 13 provides a non-all-inclusive list of applicable laws, regulations, acts, etc.

1. Due to the fact that the Project is financed, in part, by the Commonwealth of Pennsylvania via a grant from the American Rescue Plan Act-Capital Projects Fund-Multi Purpose Community Facilities Program (ARPA CPF MPCFP), all Contractors (including all subcontractors) shall comply with all applicable Federal and State laws, regulations, and grant requirements. Excerpts from Grant ARPA CPF MPCFP Contract #C000090918 are included following this Section (Attachments C, G, and H).
2. The Contractor shall provide a temporary construction sign that reads "This Project was financed, in part, by a Grant from the American Rescue Plan Act-Capital Projects Fund-Multi Purpose Community Facilities Program. At a minimum, the financing acknowledgment sign shall be constructed of 3/4" fir plywood (A-A INT-APA Paint Grade), edged with 3/4" x 1" exterior wood trim (2'-8" H x 6'-0" W) on treated wood posts. Background shall be painted white (exterior paint). Project Sign shall also include Project Title (Mercer County Agricultural and Conservation Community Learning Center at Munnell Run Farm).
3. Contractors and all subcontractors shall not be currently under suspension or debarment by the Commonwealth of Pennsylvania, any other state, or the federal government.
    a. Bidders shall have no outstanding tax liability to the Commonwealth of Pennsylvania.

b. Bidders shall disclose any violations with Commonwealth of Pennsylvania Department of Labor and Industry wage rates.
c. Bidders shall not appear on the federal website https://www.sam.gov.

E. Pennsylvania's Public Works Employment Verification Law (Act 127 of 2012 and as amended by 2022 Act 141 Article XXIV-C): All contractors and subcontractors shall verify their employees are authorized to work in the United States through the Federal government's Employment Verification Program (EVP) and E-Verify®, an internet-based system, operated by the United States Department of Homeland Security. A copy of the Commonwealth of Pennsylvania Public Works Employment Verification Form as provided by the Pennsylvania Department of General Services is included following this Section. The Form and relevant information are available at https://www.dgs.pa.gov/Materials-Services-Procurement/Public-Works-Employment-Verification.

1. Contractor's execution of the form acknowledges that the Contractor is participating in the E-Verify Program (EVP) and is subject to the requirements of Federal Law governing the use of EVP.
2. Compliance by the Contractor shall be a precondition of Contract Award.
3. In conducting the verification required by this provision, neither Contractor nor any subcontractor may discriminate against any employee on the basis of race, ethnicity, color or national origin.
4. Contractor shall complete said Form and submit it to the Project Owner within twenty-four (24) hours of the bid opening.
    a. Each awarded Contractor's subcontractors shall also submit said form to the Project Owner prior to performing work on site, verifying their employees are authorized to work in the United States.

1.09 COMPLETION OF WORK AND LIQUIDATED DAMAGES

A. The Bidder shall submit his Bid with the understanding that (1) the Work shall be completed in accordance with Section 011000 "Scheduling Requirements of the Work", and the Final Project Completion Date(s) shall be as stated therein, (2) the time for the completion of the Work shall be considered of the essence of this Contract, and (3) for the costs of extra inspection, salaries of contingent forces and other expenses entailed by the Owner by delay in completing the contract, said Owner shall be entitled to liquidated damages in the following amounts:

Final Project Completion Date	**$500.00**
Final Project Closeout Completion Date	**$400.00**

for each and every calendar day's delay from the Final Completion Date(s) specified, not solely caused by the Owner, provided however, that the Contractor shall be entitled to one day in addition to the time stipulated for each work day's delay that may be solely caused by the Owner or conditions beyond the control of the Contractor. Weather conditions will not be considered as reason for extension of time for completion of work. It is further understood, however, that any extensions of time, regardless of cause, must be requested by letter originated by the Contractor, and the Owner must grant such extensions by letter prior to same becoming effective.

B. The Owner's receipt of an Occupancy Permit does not constitute "Completion" of the work by the Contractor. To reach "Completion", the Project must have all work complete, there shall be no missing or incomplete items or temporary items on both the building/structure and site.

1.10 PREPARATION AND PRESENTATION OF BIDS

A. Each bid must be submitted upon the enclosed Bid Forms, one Bid Form required, without duplicates. Bids must be delivered in a sealed opaque envelope on or before the time and at the place stated above. Name of the Bidder, Contract Name and Number shall appear on the face of the bid envelope.

B. Bids containing any omissions, conditions, unexplained erasures or alterations or items not called for in the Bid Form, or irregularities of any kind, may be declared nonresponsive and rejected as being incomplete.

1. Also refer to Section 004513 for additional reasons that may subject the bidder to disqualification and his bid to rejection.

C. Each bid must have the full business address of the Bidder and be signed with the usual signature of the Bidder. Bids by partnerships must furnish the names of all partners and must be signed in the partnership name by an authorized partner or representative. Bids by corporations must be signed with the legal name of the corporation, followed by the name of the state of incorporation and by the signature and designation of the president, secretary or other person authorized to bind it in the matter. When requested, satisfactory evidence of the authority of the officer signing on behalf of the corporation shall be furnished.

D. In submitting bids, bidder shall record all addenda issued, giving addendum number and date.

1.11 CONTRACT FORMS

A. Contracts will be prepared by the Architect on A.I.A. standard forms and reviewed by the Owner's Solicitor.

1.12 AWARD OF CONTRACT

A. The Contract will be awarded as soon as possible to the lowest responsible Bidder provided the bid is reasonable and it is in the interest of the Owner to accept it.

B. The Owner shall have the right to accept Alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted on the date of Contract Award.

C. The Owner reserves the right to waive any informality in bids when such waiver is in the interest of the Owner.

D. The Owner reserves the right to reject any and all bids when such rejection is in the interest of the Owner, and to reject the bid of any Bidder, who in the Owner's judgment, is not in position to perform the Contract.

E. Each Bidder agrees to waive any claim it has or may have against the Owner, the Architect/Engineer, and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

1.13 DEFINITIONS

A. The Contract Documents consist of the Agreement, the Conditions of the Contract, (General, Supplemental and other Conditions), the Drawings, Project Manual and all Addenda issued, including all

modifications thereof incorporated into the Documents before their execution. These form the Contract Documents.

B. The Owner is the County of Mercer.

C. The Architect / Engineer is HHSDR, Registered Architects and Engineers, 40 Shenango Avenue, Sharon, PA, 16146, (724) 981-8820, and 201 Century Building, 130 Seventh Street, Pittsburgh, PA, 15222, (412) 281-2280.

D. The Contractor is the person, firm or corporation, together with the bonding surety, by whom this Contract has been executed for the performance and completion of the work herein described.

E. The Subcontractor is the person or entity, firm or corporation having a direct contract with the Contractor and it includes one who furnishes material worked to a special design according to the Plans and Specifications of this work, but does not include one who merely furnishes material not so worked.

F. The Project is all the work to be performed under this or other Contracts involving construction and the furnishing and installing of material, equipment and utilities as required for the completion and use of the Owner.

G. Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the Corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to the person who gives the notice.

H. The term "work" of the Contractor or Subcontractor includes labor and/or material.

END OF SECTION 002000

ATTACHMENTS FOLLOWING THIS SECTION:

Public Works Employment Verification Form

Excerpts from Grant ARPA CPF MPCFP Contract #C000090918 are included following this Section (Attachments C, G, and H)

Commonwealth of Pennsylvania

Public Works Employment Verification Form

Public Works Employment Verification Office
Department of General Services
Bureau of Procurement 6th floor, Forum Place 555 Walnut Street
Harrisburg, PA 17101-1914
717-346-8115
ra-gsgseverify.pa.gov

Instructions: Complete and return the form to the contracting Public Body prior to the award of the contract.

Business or Organization Name (Employer) _____

Address _____

City _____ State _____ Zip Code _____

Check One:

- ☐ Contractor
- ☐ Subcontractor

Contracting Public Body _____

Contract/Project No. _____

Project Description _____

Project Location _____

Date enrolled in E-Verify _____

As a contractor/subcontractor for the above referenced public works contract, I hereby affirm that as of the above date, our company is in compliance with the Public Works Employment Verification Act ('the Act') through utilization of the federal E-Verify Program (EVP) operated by the United States Department of Homeland Security. To the best of my/our knowledge, all employees hired post January 1, 2013 are authorized to work in the United States.

It is also agreed to that all public works contractors/subcontractors will utilize the federal EVP to verify the employment eligibility of each new hire within five (5) business days of the employee start date throughout the duration of the public works contract. Documentation confirming the use of the federal EVP upon each new hire shall be maintained in the event of an investigation or audit.

I,_____, authorized representative of the company above, attest that the information contained in this verification form is true and correct and understand that the submission of false or misleading information in connection with the above verification shall be subject to sanctions provided by law.

_____ _____

Authorized Representative Signature Date of Signature

INSURANCE AND TAX LIABILITY REQUIREMENTS

LIABILITY INSURANCE

The Grantee's standard liability insurance policies must protect, or be endorsed to protect, the Commonwealth from claims of bodily injury, property damage, or a combination thereof arising out of any activities performed by the Grantee or its employees or agents under this agreement, including business and non-business invitees, and their property and all other property sustaining damage as a direct or indirect result of the execution of the Project when validly present on Grantee's premises whether or not actually engaged in the Project at the time the claim inures. These policies do not include any provision limiting then existing sovereign immunity of the Commonwealth or of its agents or employees. Upon request, the Grantee shall furnish to the Authority proof of insurance as required by this paragraph.

- **Key Takeaway:** The certificate of insurance should list the commonwealth as an additional insured

WORKERS' COMPENSATION INSURANCE

The Grantee shall provide workers' compensation insurance where the same is required and shall accept full responsibility for the payment of premiums for workers' compensation and social security and any other taxes or payroll deductions required by law for its employees who are performing activities specified by this agreement.

KEY COMPLIANCE REQUIREMENTS SUMMARY

Note: All of the Grantee's subcontracts with contractors providing goods or services as part of this project must contain provisions of nondiscrimination/sexual harassment set forth in Attachment G & H and, where applicable, must contain the federal contracting provisions set forth in Attachment G & H.

ATTACHMENT C - PROGRAM SPECIFIC CONDITIONS

PA Prevailing Wage: Work completed as part of this Project is subject to Pennsylvania Prevailing Wage (not Federal Davis Bacon wages). Prevailing wage rates must be included in all bid documents, specifications, and construction contracts pertaining to the project.

ATTACHMENT G - FEDERAL CONTRACTING PROVISIONS

See Section 4 - Required Provisions in Federal Contracts → this should be included in contracts.

ATTACHMENT H - COMMONWEALTH STANDARD TERMS AND CONDITIONS

See Section 3 - Nondiscrimination/Sexual Harassment

See Section 5 - Contractor Responsibility

See Section 11 - Worker Protection and Investment

ATTACHMENT C

PROGRAM SPECIFIC CONDITIONS

1. ELIGIBLE PROJECTS

Eligible projects under this program will include construction or improvements to full-service community buildings, structures, and public spaces. Examples include, but are not limited to, schools, libraries, and community health centers that serve community needs.

2. ELIGIBLE PROJECT COSTS

a. Funds may be used for any of the following eligible costs:

- **i.** Pre-project development costs and uses, including data-gathering; feasibility studies; community engagement and public feedback processes; equity assessments and planning, and needs assessments; permitting, planning, architectural design, engineering design; and work related to environmental, historical, and cultural reviews.
- **ii.** Costs of repair, rehabilitation, construction, improvement, and acquisition of real property, equipment (e.g., devices and office equipment), and facilities.
- **iii.** Ancillary costs necessary to operationalize and put the capital assets to full use, including costs to increase broadband adoption and improve digital literacy.

b. Administrative costs of the Grantee to administer the grant are limited to 2.5 percent of the grant award.

c. Administrative costs include costs to complete the grant application, costs associated with monitoring of and reporting on the project, advertising costs, and personnel costs including salaries and fringe benefits for staff required for carrying out the project.

d. The Grantee may use funds to cover costs incurred during the period beginning March 15, 2021, for one or more eligible Projects. For pre-award costs incurred after March 15, 2021, but prior to execution of this agreement, the Grantee shall provide reasonable assurance that the costs were incurred pursuant to the negotiation of and in anticipation of the Capital Projects Fund award and are necessary for the efficient and timely performance of the Project. These costs are allowable only to the extent they would have been allowable if incurred after the date of the Capital Projects Fund award and only with the written approval of Treasury.

3. EXPENDITURE OF FUNDS

a. Ten percent of awarded funds will be reserved until a final report is submitted to the Authority.

b. All funds must be expended by December 31, 2026, which is the end of the period of performance.

4. SUBSTANTIAL COMPLETION

All projects funded through this program must reach substantial completion before December 31, 2026. Substantial completion is defined as the date for which the project can fulfill the primary operations that it was designed to perform, delivering services to end-users. At substantial completion, facility operations must be operational. Extensions may be granted beyond this timeframe to the extent that factors deemed to be outside of the grantee's control, in the Authority's sole discretion, have impacted project delivery timelines. The Authority will approve extension requests on a case-by-case basis.

5. PROJECT SUSTAINABILITY

a. The Grantee shall incorporate a viable strategy that extends beyond initial investment to demonstrate the continued enabling of work, education, and health monitoring activities at the respective facility. The Grantee shall create sustainability models or long-term plans beyond the period of performance.

b. The Grantee shall provide the Authority a detailed list of intended and observed outcomes, outputs, activities, progress indicators, means of verification, and risks and assumptions associated with the project.

6. FINAL REPORT

The Grantee shall provide a final report three months after project completion. This final report will outline the activities that took place during the project, including a description of all construction that occurred, total project costs, and a description of the use of grant funds. The report will also include a summary of how the project implemented a sustainability plan addressed and enhanced equity in the community. The final 10% of grant funds will be held until the final report has been submitted to and reviewed by the Authority with any questions or concerns having been addressed by the Grantee to the Authority's satisfaction.

7. PROJECT RECORDS

The Grantee shall maintain full and accurate records with respect to the project and shall ensure adequate control over related parties in the project. The Authority requires access to the records, as well as the ability to inspect all work, invoices, materials, and other relevant records at reasonable times and places. Upon request of the Authority, the Grantee shall furnish all data, reports, contracts, documents, and other information relevant to the project.

8. CERTIFICATION OF EXPENSES

The Grantee is required to sign a payment request form certifying that the expenses were incurred and were in accordance with the scope of work approved by the Authority. Prior to final closeout of the grant agreement, the Grantee is required to submit copies of all canceled checks verifying the expenditure of the Program proceeds. Bank statements may also be submitted if electronic payment of the expenditure occurred. Notwithstanding, the Authority reserves the right to conduct a formal project audit of any project in the Authority's sole discretion.

9. PA PREVAILING WAGE ACT

a. While the federal Davis-Bacon Act prevailing wage requirements do not apply to projects funded through this program, the Pennsylvania Prevailing Wage Act (43 P.S. § 165-1 et seq.; 34 Pa. Code § 9.101 et seq.) may apply to projects funded under this program. Prevailing Wage requirements are generally applicable to grants for construction, demolition, reconstruction, alteration, repair work, renovations, build-out and installation of machinery and equipment more than $25,000.

b. The grantee is responsible for including prevailing wage rates in all bid documents, specifications, and construction contracts pertaining to the project. The Pennsylvania Department of Labor and Industry (L&I) has final authority to make prevailing wage applicability determinations. Additional reporting requirements apply to project $5 million or more.

10. AFFORDABILITY WEBSITE

Upon written electronic notification from the Authority to Grantee, Grantee shall have 30 days to demonstrate to the Authority that the Authority's affordability website and accompanying resources can be accessed via the Grantee's public-facing website.

ATTACHMENT G

FEDERAL CONTRACTING PROVISIONS

1. CIVIL RIGHTS COMPLIANCE

a. The Grantee shall comply with the legal requirements relating to nondiscrimination and nondiscriminatory use of Federal funds. Grantee may not deny benefits or services, or otherwise discriminate on the basis of race, color, national origin (including limited English proficiency), disability, age, or sex (including sexual orientation and gender identity) in accordance with the following authorities:

i. Title VI of the Civil Rights Act of 1964, P.L. 88-352 (42 U.S.C. 2000d-1 et. seq.) and related regulations (31 CFR Part 22), which provide that no person in the United States shall, on the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Grantee receives Federal financial assistance.

ii. Section 504 of the Rehabilitation Act of 1973 (Section 504), Public Law 93-112, as amended by Public Law 93-516, 29 U.S.C. 794, which provide that no otherwise qualified individual with a disability in the United States as defined in section 7(20) [29 USCS § 705(20)], shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

iii. Age Discrimination Act of 1975, Public Law 94-135, 42 U.S.C. 6101 et seq., and the Department implementing regulations at 31 CFR part 23. no person in the United States shall, on the basis of age, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under, any program or activity receiving Federal financial assistance.

iv. Pennsylvania Human Relations Act of October 27, 1957, P.L. 744, (43 P.S. 951-963) which provides that no employee, applicant for employment, independent contractor, or any other person shall be discriminated against because of race, color, religious creed, ancestry, national origin, age, or sex.

b. The Grantee will be required to provide a narrative describing its compliance with Title VI.

2. HATCH ACT

The Grantee will comply with the provisions of the Hatch Act, P.L. 85-554 (5 U.S.C 1501 et seq.) which limits the political activity of employees.

3. CONFLICT OF INTEREST

The Grantee will establish safeguards to prohibit employees from using positions for a purpose that is or gives the appearance of being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties. (2 CFR 200.112)

4. REQUIRED PROVISIONS IN FEDERAL CONTRACTS (2 CFR.327)

Not all provisions will apply to all programs and their application is dependent on the requirements of the federal program under which this agreement is executed.

a. Remedies for Breach of Contract

Contracts for more than the simplified acquisition threshold (currently $250,000.00), which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, and found at 48 CFR Subpart 2.101, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for sanctions and penalties as appropriate. (2 CFR 200 Appendix II (A))

b. Termination Provision

For all contracts in excess of $ 10,000, the Grantee must address termination for cause and for convenience, including the manner by which it will be effected and the basis for settlement. (2 CFR 200 Appendix II (B))

c. Equal Employment Opportunity

Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor." (2 CFR 200 Appendix II (C))

d. Davis-Bacon Act, as Amended (40 U.S.C. 3141-3148)

When required by Federal program legislation, all prime construction contracts in excess of $ 2,000 awarded by Grantee must include a provision for compliance with the Davis- Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The Grantee must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The Grantee must report all suspected or reported violations to the Grantor and the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The Grantee must report all suspected or reported violations to the Federal Awarding Agency. (2 CFR 200 Appendix II (D))

e. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)

Where applicable, all contracts awarded by the Grantee in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence. (2 CFR 200 Appendix II (E))

f. Rights to Inventions Made Under a Contract or Agreement

If the Federal award meets the definition of "funding agreement" under 37 CFR § 401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the Federal awarding agency. (2 CFR 200 Appendix II (F))

g. Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as Amended

Contracts and subgrants of amounts in excess of $ 150,000 must contain a provision that requires compliance with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency. (2 CFR 200 Appendix II (G))

h. Debarment And Suspension (Executive Orders 12549 And 12689)

A contract award (see 2 CFR 180.220) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. (2 CFR 200 Appendix II (H))

i. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)

Contractors that apply or bid for an award exceeding $ 100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. The disclosures are forwarded from tier to tier up to the

non-Federal award. (2 CFR 200 Appendix II (I))

j. Procurement of Recovered Materials

If the Grantee is an agency of a political subdivision of the Commonwealth of Pennsylvania, the Grantee and its subcontractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency ("EPA") at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds $10,000 or the value of the quantity acquired during the preceding fiscal year exceeded $10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines. (2 CFR 200 Appendix II (J)) and (2 CFR 200.323).

k. Prohibition on Certain Telecommunications and Video Surveillance Services of Equipment

Grantee and its subcontractors are prohibited from obligating or expending grant funds for equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. The definition of "covered telecommunication equipment" is telecommunication equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of those entities). More detailed information is available at 2 CFR 200.216. (2 CFR 200 Appendix II (K)) and (2 CFR 200.216)

l. Domestic Preferences for Procurements

As appropriate and to the extent consistent with law, the Grantee should, to the greatest extent practicable under this agreement, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award. For purposes of this section: (1) "Produced in the United States'' means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States. (2) "Manufactured products: means items and construction materials composed in whole or in part of nonferrous metals such as aluminum; plastics and polymer- based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber. (2 CFR 200.322)(2 CFR 200 Appendix II (L)) and (2 CFR 200.322).

ATTACHMENT H

Commonwealth Standard Terms and Conditions
Grant Version
(Revised - 10/1/2023)

1. DEFINITIONS

Capitalized terms used in these Commonwealth standard terms and conditions that are not otherwise defined in these provisions have the meanings specified in the agreement to which they are attached.

2. INDEMNIFICATION

The Grantee shall indemnify and defend the Commonwealth against all third-party claims, suits, demands, losses, damages, costs, and expenses, including without limitation, litigation expenses, attorneys' fees, and liabilities, arising out of or in connection with any activities performed by the Grantee or its employees and agents pursuant to this agreement, as determined by the Commonwealth in its sole discretion.

3. NONDISCRIMINATION/SEXUAL HARASSMENT

a. Representations. The Grantee represents that it is presently in compliance with and will remain in compliance with all applicable federal, state, and local laws, regulations, and policies relating to nondiscrimination and sexual harassment for the term of the agreement. The Grantee shall, upon request and within the time periods requested by the Commonwealth, furnish all necessary employment documents and records, including EEO-1 reports, and permit access to its books, records, and accounts by the Commonwealth for the purpose of ascertaining compliance with provisions of this Nondiscrimination/Sexual Harassment Clause.

b. Nondiscrimination/Sexual Harassment Obligations. The Grantee shall not:

i. in any manner discriminate in the hiring of any employee(s) for the performance of the activities required under this agreement or any subgrant agreement, contract, or subcontract, by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the Pennsylvania Human Relations Act ("PHRA") and applicable federal laws, against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.

ii. in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against or intimidate any of its employees.

iii. in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, in the provision of services under this agreement or any subgrant agreement, contract, or subcontract.

iv. in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of PHRA and applicable federal laws, against any subgrantee, contractor, subcontractor, or supplier who is qualified to perform the work to which this agreement relates.

v. in any manner discriminate against employees by reason of participation in or decision to refrain from participating in labor activities protected under the Public Employee Relations Act, Pennsylvania Labor Relations Act, or National Labor Relations Act, as applicable, and to the extent determined by entities charged with the Acts' enforcement and shall comply with any

provision of law establishing organizations as employees' exclusive representatives.

c. **Establishment of Grantee Policy.** The Grantee shall establish and maintain a written nondiscrimination and sexual harassment policy that complies with the applicable law and these Nondiscrimination/Sexual Harassment provisions and shall inform its employees in writing of the policy. The policy must contain a provision that states that sexual harassment will not be tolerated and employees who practice it will be disciplined. For the entire period of this agreement, the Grantee shall: (1) post its written nondiscrimination and sexual harassment policy or these Nondiscrimination/Sexual Harassment provisions conspicuously in easily accessible and well- lighted places customarily frequented by employees at or near where the grant activities are performed; or (2) provide electronic notice of the policy or this clause to its employees not less than annually.

d. **Notification of Violations.** The Grantee's obligations pursuant to these provisions are ongoing from the effective date and through the termination date of the agreement. Accordingly, the Grantee shall notify the Commonwealth if, at any time during the term of this agreement, it becomes aware of any actions or occurrences that would result in violation of these provisions.

e. **Cancellation or Termination of Agreement.** The Commonwealth may cancel or terminate this agreement and all money due or to become due under this agreement may be forfeited for a violation of the terms and conditions of these Nondiscrimination/Sexual Harassment provisions. In addition, the granting agency may proceed with debarment or suspension and may place the Grantee in the Contractor Responsibility File.

f. **Subgrant Agreements, Contracts, and Subcontracts**. The Grantee shall include these Nondiscrimination/Sexual Harassment provisions in its subgrant agreements, contracts, and subcontracts with all subgrantees, contractors, and subcontractors providing goods or services under this agreement. The incorporation of these provisions in the Grantor's subgrants, contracts, or subcontracts does not create privity of contract between the Commonwealth and any subgrantee, contractor, or subcontractor, and no third-party beneficiaries are created by those provisions. If the Grantee becomes aware of a subgrantee's, contractor's, or subcontractor's violation of these provisions, the Grantee shall use its best efforts to ensure the subgrantee's, contractor's, or subcontractor's compliance with these provisions.

4. GRANTEE INTEGRITY

a. **Definitions.** For purposes of these Grantee Integrity Provisions, the following definitions apply:

i. "Affiliate" means two or more entities where (a) a parent entity owns more than 50% of the voting stock of each of the entities; (b) a common shareholder or group of shareholders owns more than 50% of the voting stock of each of the entities; or (c) the entities have a common proprietor or general partner.

ii. "Grantee" means the individual or entity, that has entered into this agreement with the Commonwealth.

iii. "Grantee Related Parties" means any Affiliates of the Grantee and the Grantee's executive officers, Pennsylvania officers and directors, or owners of five percent or more interest in the Grantee.

iv. "Financial Interest" means ownership of more than a five percent interest in any business or holding a position as an officer, director, trustee, partner, employee, or holding any position of management.

v. "Gratuity" means tendering, giving, or providing anything of more than nominal monetary value including, but not limited to, cash, travel, entertainment, gifts, meals, lodging, loans, subscriptions, advances, deposits of money, services, employment, or contracts of any kind. The exceptions set forth in the Governor's Code of Conduct, Executive Order 1980- 18, as may be amended, 4 Pa. Code §7.153(b), apply.

vi. "Non-Solicitation Award Process" means a method of awarding grants based on predetermined criteria, without the solicitation of grant applications.

b. Representations and Warranties.

i. **Grantee Representation and Warranties.** The Grantee represents, to the best of its knowledge and belief, and warrants that within the last five years neither the Grantee nor Grantee Related Parties have:

1. been indicted or convicted of a crime involving moral turpitude or business honesty or integrity in any jurisdiction;

2. been suspended, debarred, or otherwise disqualified from entering into any contract with any governmental agency;

3. had any business license or professional license suspended or revoked;

4. had any sanction or finding of fact imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust; and

5. been, and are not currently, the subject of a criminal investigation by any federal, state, or local prosecuting or investigative agency or civil anti-trust investigation by any federal, state, or local prosecuting or investigative agency.

ii. **Grantee Explanation**. If the Grantee cannot make the representations and warranties set forth above at the time of its submission of its grant application or if the agreement is awarded pursuant to a Non-Solicitation Award Process at the time of the execution of the agreement, the Grantee shall submit a written explanation outlining the reasons why it cannot make those representations and warranties. The Commonwealth may, based on its evaluation of the explanation provided, determine whether it is in the Commonwealth's best interest to execute the agreement.

iii. **Further Representations**. By submitting any bills, invoices, or requests for payment pursuant to the agreement, the Grantee further represents that it has not violated any of these Grantee Integrity Provisions during the term of the agreement.

iv. **Notice.** The Grantee shall immediately notify the Commonwealth, in writing, if at any time during the term of the agreement it becomes aware of any event that would cause the Grantee's certification or explanation to change. The Commonwealth may, in its sole discretion, terminate the agreement for cause if it learns that any of the certifications made in these Grantee Integrity Provisions are currently false or misleading due to intervening factual circumstances or were false or misleading or should have been known to be false or misleading when entering into the agreement.

c. **Grantee Responsibilities.** During the term of this agreement, the Grantee shall:

i. maintain the highest standards of honesty and integrity.

ii. take no action in violation of any applicable laws, regulations, or other requirements applicable to the Grantee that govern Commonwealth contracting or grant administration.

iii. establish and implement a written business integrity policy that includes, at a minimum, the requirements of these Grantee Integrity Provisions as they relate to the Grantee's activity with the Commonwealth and Commonwealth employees and ensure that its employees comply with the policy.

iv. not accept, agree to give, offer, confer, agree to confer, or promise to confer, directly or indirectly, any gratuity or pecuniary benefit to any person, or to influence or attempt to influence any person in violation of any federal or state law, regulation, executive order, statement of policy, management directive, or bulletin applicable to the award of grants or the administration of this agreement.

v. not have a financial interest in any other subgrantee, contractor, subcontractor, or supplier providing services, labor, or material under this agreement, unless the financial interest is disclosed to the Commonwealth in writing and the Commonwealth consents to Grantee's financial interest. The Grantee must disclose the financial interest to the Commonwealth at the time of submission of its grant application, or if a Non-Solicitation Award Process is used, no later than the date the Grantee signs the agreement. The Commonwealth shall be deemed to have consented if the required disclosure is received and all of the required Commonwealth signatures are affixed.

vi. comply with the requirements of the Lobbying Disclosure Act (65 Pa.C.S. § 13A01 et seq.) regardless of the method of award.

vii. comply with the requirements of Section 1641 of the Pennsylvania Election Code (25 P.S.§ 3260a) if this agreement was awarded pursuant to a Non-Solicitation Award Process.

viii. immediately notify the Commonwealth or the Office of the State Inspector General, in writing, when the Grantee has reason to believe that any breach of ethical standards as set forth in law, the Governor's Code of Conduct, or these Grantee Integrity Provisions has occurred or may occur, including, but not limited to, contact by a Commonwealth officer or employee, which, if acted upon, would violate the ethical standards.

d. **Investigations.** If a State Inspector General investigation is initiated, the Grantee shall reimburse the Commonwealth for the reasonable costs of investigation incurred by the Office of the State Inspector General for investigations of the Grantee's compliance with the terms of this or any other agreement between the Grantee and the Commonwealth that results in the suspension or debarment of the Grantee. The Grantee shall not be responsible for investigative costs for investigations that do not result in the Grantee's suspension or debarment.

i. cooperate with the Office of the State Inspector General in its investigation of any alleged Commonwealth agency or employee breach of ethical standards and any alleged Grantee non-compliance with these Grantee Integrity Provisions and make identified Grantee employees and volunteers available for interviews at reasonable times and places.

ii. upon the inquiry or request of an Inspector General, provide, or if appropriate, make promptly available for inspection or copying, any information of any type or form deemed relevant by the Office of the State Inspector General to Grantee's integrity and compliance with these

provisions. This information may include, but is not limited to, the Grantee's business or financial records, documents or files of any type or form that refer to or concern this agreement.

e. **Termination.** For violation of any of these Grantee Integrity Provisions, the Commonwealth may terminate this agreement and any other contract with the Grantee, claim liquidated damages in an amount equal to the value of anything received in breach of these Grantee Integrity provisions, claim damages for all additional costs and expenses incurred in obtaining another grantee to complete performance under this agreement, and debar and suspend the Grantee from doing business with the Commonwealth. These rights and remedies are cumulative, and the use or non- use of any one does not preclude the use of all or any other. These rights and remedies are in addition to those the Commonwealth may have under law, statute, regulation, or otherwise.

f. **Subcontracts.** The Grantee shall include these Grantee Integrity Provisions in its subgrant agreements, contracts, and subcontracts with all subgrantees, contractors, and subcontractors providing goods or services under this agreement. The incorporation of this provision in the Grantee's subgrant agreements, contracts, and subcontracts shall not create privity of contract between the Commonwealth and any subgrantee, contractor, or subcontractor, and no third-party beneficiaries are created by the inclusion of these provisions. If the Grantee becomes aware of a subgrantee's, contractor's, or subcontractor's violation of these provision, the Grantee shall use its best efforts to ensure their compliance with these provisions.

5. CONTRACTOR RESPONSIBILITY

a. **Definition**. For the purpose of these provisions, the term "Contractor" means as any person, including, but not limited to, a bidder, offeror, loan recipient, grantee or lessor, who has furnished or performed or seeks to furnish or perform, goods, supplies, services, leased space, construction or other activity, under a contract, grant, lease, purchase order or reimbursement agreement with the Commonwealth. The term also includes a permittee, licensee, or any agency, political subdivision, instrumentality, public authority, or other public entity in the Commonwealth.

b. **Contractor Representations.**

i. The Contractor represents for itself and its subgrantees, contractors, and subcontractors required to be disclosed or approved by the Commonwealth, that as of the date of its execution of this agreement, that neither the Contractor, nor any of its subgrantees, contractors, and subcontractors, are under suspension or debarment by the Commonwealth or any governmental entity, instrumentality, or authority and, if the Contractor cannot make this representation, the Contractor shall submit, along with the agreement, a written explanation of why the certification cannot be made.

ii. The Contractor represents that, as of the date of its execution of this agreement, it has no tax liabilities or other Commonwealth obligations, or has filed a timely administrative or judicial appeal, if any liabilities or obligations exist, or is subject to a duly approved deferred payment plan if any liabilities exist.

c. **Notification.** The Contractor shall notify the Commonwealth if, at any time during the term of the agreement, it becomes delinquent in the payment of taxes, or other Commonwealth obligations, or if it or, to the best of its knowledge, any of its subgrantees, contractors, or subcontractors are suspended or debarred by the Commonwealth, the federal government, or any other state or governmental entity. The Contractor shall provide this notification within 15 days of the date of suspension or debarment.

d. **Default.** The Contractor's failure to notify the Commonwealth of its suspension or debarment by the Commonwealth, any other state, or the federal government constitutes an event of default of the agreement with the Commonwealth.

e. **Reimbursement.** The Contractor shall reimburse the Commonwealth for the reasonable costs of investigation incurred by the Office of State Inspector General for investigations of the Contractor's compliance with the terms of this agreement or any other agreement between the Contractor and the Commonwealth that results in the suspension or debarment of the Contractor. These costs include, but are not limited to, salaries of investigators, including overtime; travel and lodging expenses; and expert witness and documentary fees. The Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.

f. **Suspension and Debarment List.** The Contractor may obtain a current list of suspended and debarred Commonwealth contractors by visiting the eMarketplace website at http://www.emarketplace.state.pa.us and clicking the Debarment list tab.

6. AMERICANS WITH DISABILITIES ACT

a. **No Exclusion.** Pursuant to the Americans with Disabilities Act, 42 U.S. Code § 12101, et seq., no qualified individual with a disability may, on the basis of the disability, be excluded from participation in this agreement or from activities provided for under this agreement.

b. **Compliance.** For all goods and services provided pursuant to this agreement, the Grantee shall comply with Title II of the Americans with Disabilities Act, the "General Prohibitions Against Discrimination" set forth in 28 C. F. R. § 35.130, and all other regulations promulgated under Title II of the Americans with Disabilities Act that apply to state and local governments.

c. **Indemnification.** The Grantee shall indemnify the Commonwealth against all third-party claims, suits, demands, losses, damages, costs, and expenses, including without limitation, litigation expenses, attorneys' fees, and liabilities, arising out of or in connection with the Grantee's failure or its employee's or agent's failure to comply with the provisions of paragraph a, as determined by the Commonwealth in its sole discretion.

7. APPLICABLE LAW AND FORUM

This agreement is governed by and must be interpreted and enforced in accordance with the laws of the Commonwealth of Pennsylvania (without regard to any conflict of laws provisions) and the decisions of the Pennsylvania courts. The Grantee consents to the jurisdiction of any court of the Commonwealth of Pennsylvania and any federal courts in Pennsylvania and waives any claim or defense that such forum is not convenient or proper. Any Pennsylvania court or tribunal has in personam jurisdiction over the Grantee, and the Grantee consents to service of process in any manner authorized by Pennsylvania law. This provision may not be interpreted as a waiver or limitation of the Commonwealth's rights or defenses.

8. RIGHT TO KNOW LAW

a. **Applicability**. The Pennsylvania Right-to-Know Law, 65 P.S. §§ 67.101-3104, ("RTKL") applies to this agreement.

b. **Grantee Assistance.** If the Commonwealth needs the Grantee's assistance in any matter arising out of the RTKL related to this agreement, the Commonwealth shall notify the Grantee that it requires the Grantee's assistance, and the Grantee shall provide to the Commonwealth:

i. access to, and copies of, any document or information in the Grantee's possession (Requested Information) arising out of this agreement that the Commonwealth reasonably believes is a

public record under the RTKL, within ten calendar days after receipt of written notification; and

ii. any other assistance as the Commonwealth may reasonably request, in order to comply with the RTKL with respect to this agreement.

c. **Trade Secret or Confidential Proprietary Information.**

If the Grantee considers the Requested Information to include a Trade Secret or Confidential Proprietary Information, as those terms are defined by the RTKL, or other information that the Grantee considers exempt from production under the RTKL, the Grantee shall notify the Commonwealth and provide, within seven calendar days of receipt of the written notice a written statement, signed by a representative of the Grantee, that explains why the requested material is exempt from public disclosure under the RTKL. If the Commonwealth determines that the Requested Information is clearly not exempt from disclosure, the Grantee shall provide the Requested Information to the Commonwealth within five business days of receipt of written notice of the Commonwealth's determination.

d. **Reimbursement**

i. **Commonwealth Reimbursement.** If the Grantee fails to provide the Requested Information and the Commonwealth is ordered to produce the Requested Information, the Grantee shall reimburse the Commonwealth for any damages, penalties, or costs that the Commonwealth may incur as a result of the Grantee's failure, including any statutory damages assessed against the Commonwealth.

ii. **Grantor Reimbursement**. The Commonwealth will reimburse the Grantee for any costs that the Grantee incurs as a direct result of complying with these provisions only to the extent allowed under the fee schedule established by the Office of Open Records or as otherwise provided by the RTKL.

e. **Challenges of Commonwealth Release.** The Grantee may file a legal challenge to any Commonwealth decision to release a record to the public with the Office of Open Records, or in the Pennsylvania Courts, however, the Grantee shall reimburse the Commonwealth for any legal expenses incurred by the Commonwealth as a result of the challenge, including any damages, penalties or costs that the Commonwealth may incur as a result of the Grantee's legal challenge, regardless of the outcome.

f. **Waiver.** As between the parties, the Grantee waives all rights or remedies that may be available to it as a result of the Commonwealth's disclosure of Requested Information pursuant to the RTKL.

g. **Survival.** The Grantee's obligations contained in this Section survive the termination or expiration of this agreement.

9. **OFFSET**

The Commonwealth may set off the amount of any state tax liability or other obligation of the Grantee, or its subsidiaries, owed to the Commonwealth against any payments due the Grantee under any contract between the Commonwealth and Grantee.

10. AUTOMATED CLEARING HOUSE (ACH) PAYMENTS

a. **Payment Method.** The Commonwealth shall make payments to the Grantee through the Automated Clearing House (ACH). Within 10 days of the grant award, the Grantee must submit or must have submitted its ACH information within its user profile in the Commonwealth's Master Database. The Grantee may enroll to receive remittance information via electronic addenda and email (e- Remittance). ACH and e-Remittance information is available at the following:

https://www.budget.pa.gov/Services/ForVendors/Pages/Direct-Deposit-and-e-Remittance.aspx

b. **Unique Identifier.** The Grantee must submit a unique invoice number with each invoice submitted. The Commonwealth shall list the Grantee's unique invoice number on its ACH remittance advice to enable the Grantee to properly apply the state agency's payment to the respective invoice or program.

c. **ACH Information in the Commonwealth's Master Database.** The Grantee shall ensure that the ACH information contained in Commonwealth's Master Database is accurate and complete. The Grantee's failure to maintain accurate and complete information may result in delays in payments.

11. WORKER PROTECTION AND INVESTMENT

The Grantee shall comply with all applicable Pennsylvania state labor laws and worker safety laws including, but not limited to, the following:

a. Construction Workplace Misclassification Act;
b. Employment of Minors Child Labor Act;
c. Minimum Wage Act;
d. Prevailing Wage Act;
e. Equal Pay Law;
f. Employer to Pay Employment Medical Examination Fee Act;
g. Seasonal Farm Labor Act;
h. Wage Payment and Collection Law;
i. Industrial Homework Law;
j. Construction Industry Employee Verification Act;
k. Act 102: Prohibition on Excessive Overtime in Healthcare;
l. Apprenticeship and Training Act; and
m. Inspection of Employment Records Law.

SECTION 004116.1 - BID FORM

BID FORM

FOR

CONTRACT NO. 1 - GENERAL CONSTRUCTION

MERCER COUNTY
AGRICULTURAL AND
CONSERVATION COMMUNITY
LEARNING CENTER AT
MUNNELL RUN FARM
41 MUNNELL RUN LANE
MERCER, PA 16137

FOR THE

MERCER COUNTY COMMISSIONERS
125 SOUTH DIAMOND STREET
MERCER, PA 16137

PROPOSAL OF _____
Bidder's Name

_____
Bidder's Address

Bidder's Federal Tax I.D. Number _____

Mercer County Board of Commissioners
103 Courthouse
Mercer, PA 16137

Sirs:

In conformity with the Contract Documents as prepared by HHSDR Architects / Engineers, 40 Shenango Avenue, Sharon, PA, 16146, and 201 Century Building, 130 Seventh Street, Pittsburgh, PA, 15222, and after an examination of the site of the work, and the Contract Documents including Instructions to Bidders, this form of Proposal and Conditions of Contract, the undersigned submits this proposal and encloses herewith as a proposal guaranty, a bid bond in an amount of not less than **ten percent (10%)** of the total of the hereinafter stated bid (including Base Bid and all Add Alternate Bids) made payable to or indemnifying the County of Mercer (the Owner), which it is understood will be forfeited to and retained by the Owner as liquidated damages, if this proposal or any part thereof is accepted by the Owner and the undersigned shall fail to furnish approved bonds and execute the contract within ten (10) days from the date of issuance of the award. Should the Owner fail to make an award of this project through no fault or failure on the

part of the bidder, the Owner shall return said proposal guaranty.

It is hereby certified that the undersigned is the only person(s) interested in this proposal as principal, and that the proposal is made without collusion with any person, firm or corporation as attested to on the attached executed Non-collusive Affidavit. Bidder hereby agrees to execute the contract and furnish insurance and surety company bonds, as specified, within ten (10) days after mailing by the Owner of notice of award, and to begin work immediately after approval of said bonds and insurance.

Bidder guarantees that, if awarded the contract, the Contractor will furnish and deliver all materials, water, tools, equipment, light, heat, power, tests, transportation, secure all permits and licenses, do and perform all labor, superintendence and all means of construction, pay all fees and do all incidental work, and to execute, construct, and finish in an expeditious, substantial and workmanlike manner, in accordance with the drawings and specifications to the complete satisfaction and acceptance of the Owner for the price hereinafter stated.

For the: Mercer County Agricultural and Conservation Community Learning Center at Munnell Run Farm

It is understood that the Owner reserves the right to reject any or all proposals, or parts thereof or items therein, and to waive technicalities required for the best interests of said Owner. It is further understood that competency and responsibility of bidders will receive consideration before the award of the Contract.

Bidder submits this proposal with the understanding that the General Contractor is designated the Lead Contractor and is responsible for the daily scheduling of work within the broad framework of the Scheduling Requirements of the Work as stated in Section 011000. The Contractor submitting this Proposal has carefully reviewed the Scheduling Requirements of the Work and finds them to be reasonable and achievable. Contractor submitting this Proposal confirms that all equipment and material to be incorporated into the work will be available and accessible to install within the specified completion date(s). This Proposal is submitted with that understanding and is acknowledged by Signature below:

_____ _____

(Name) (Position)

Bidder submits this proposal with the understanding that the work shall be completed in accordance with above stated scheduling requirements and the Final Project Completion Date(s) shall be as stated therein and the time for the completion of the work shall be considered of the essence of this Contract, and that for the costs of extra inspection, salaries of contingent forces and other expenses entailed by the Owner by delay in completing the contract, said Owner shall be entitled to the liquidated damage fixed sums (as specified in Section 002000) for each and every calendar day's delay from the Final Project Completion Date(s) not solely caused by the Owner provided, however, that the Contractor shall be entitled to one day in addition to the time stipulated for each day's delay that may be solely caused by the Owner or conditions beyond the control of the Contractor. It is further understood, however, that any extensions of time, regardless of cause, beyond the above date, must be requested by letter originated by the Contractor and the Owner must grant such extension by letter prior to same becoming effective.

Contractor submitting this Proposal acknowledges that a representative of his company has visited the site during the bidding to become acquainted with the condition of the site, terrain, soil conditions, existing building (interior spaces, exterior envelope), utilities in existence, etc., as specified in Section 002000 “Instructions to Bidders”, Paragraph 1.07.A, and represents said acknowledgement by Signature below:

_____ _____

(Name) (Position)

Contractor submitting this Proposal acknowledges that he has reviewed the hereinafter "Additional Materials/Work" to be included with the Base Bid and has included the items listed in the Base Bid Total. Contractor further acknowledges that the value of all "Additional Materials/Work" items not utilized on the Project shall be deducted from the contract total at the conclusion of the project, and acknowledges same by Signature below:

_____ _____

(Name) (Position)

A Detailed Cost Breakdown sheet of the work and the contract price of the work involved will be submitted to the Architects and Engineers within the time frame specified in Section 011000.

Within 24 hours of the bid opening (if so requested), the apparent low bidder shall present evidence of the Bidder's experience, qualifications and financial ability to carry out the work in accordance with the terms of the Agreement. Bidder's qualifications shall be submitted as outlined in Section 004513 - Bidder's Proof of Competency.

Within 24 hours of the bid opening, the apparent low bidder shall submit a fully executed Public Works Employment Verification Form, as specified in Section 002000, Paragraph 1.08.E.

The Bidder agrees that he will not assign his bid or any of his rights or interests thereunder without the written consent of the Owner.

The Bid as called for is submitted in the space provided below:

BASE BID

For all General Construction Work, complete, as specified and/or shown on Contract Documents, the sum of ____

_____

_____ Dollars ($ _____).

Additional Materials/Work Note: The Base Bid shall include the amounts for the furnishing and installation of additional materials/work within the Contract time, to that shown on drawings, as stated in the following. The cost for additional items as hereafter listed shall be included in the Base Bid sum. The Owner may or may not elect to have this work performed. No material and/or labor shall be supplied until specifically requested by the Owner and/or Architect. Work described below that is not performed will be deducted from the Project total at the end of the Project. In addition to including the cost of additional items as hereafter listed in the Base Bid sum, the Contractor shall also indicate a unit price for the stated work as a basis for adjustment of the Contract amount for addition to or deletion from the additional items included in the Base Bid sum. The additional materials/work and corresponding unit prices shall include all costs, including supervision, overhead, profit, and time.

The Owner's election to have any of the following work performed, does not constitute an extension of time to the Contract.

Item	Description
1)	Furnish and install 100 square feet of exterior concrete sidewalks, beyond the extent shown on drawings. Comply with typical 5-1/2" thick exterior, reinforced concrete walk on 4" gravel base (Detail B1/SD1.2) as shown on drawings and materials as specified in Section 033000. Include removal and disposal of existing sidewalk and/or lawn and preparation of subgrade.
2)	Furnish and install 50 linear feet of 10" diameter HDPE storm water piping to maximum 4'-6" depth, beyond the extent shown on drawings; material as specified in Section 334000. Include excavation, backfill, and disposal of excess excavation as specified in Section 312000.

3) Provide for removal of 50 square feet of damaged existing plywood roof deck at Building 'B' and replacing with plywood sheathing, as specified in Section 061000, should the Architect determine that any existing plywood roof deck is damaged and requires replacement as specified in Sections 024200 and 061000.

Note: Additional amounts of work as specified above shall be due to existing unsatisfactory conditions as verified and quantified by the Architect and Owner and will not include any area damaged by the Contractor. Any areas damaged by the Contractor's activities shall be repaired by the Contractor at no cost to the Owner.

UNIT PRICES

Unit prices as hereafter listed shall be used as a basis for adjustment of the Contract amount for addition to or deletion from the amount of work on the project. Unit prices stated on this Contract Proposal Form by the Contractor shall be added to or deducted from the Contract Sum only if directed to do so by the Owner or the Architect. Any work described as a unit price item for additional work shall not be considered as part of the Contract unless so indicated by Change Order during the performance of the work. The Owner reserves the right to perform, or otherwise have performed, the work described as unit price work in the Contract Documents.

Unit prices shall include costs of all associated testing as specified for work as listed, all bonds, insurances, overhead, profit and supervision, as well as, shipping and handling and mobilization and/or de-mobilization, and Contract time, as specified in the General Conditions (Section 007216) Article 7, Paragraph 7.3.3.2.

UNIT PRICE FOR CEMENTITIOUS FLOOR UNDERLAYMENT

Provide a unit price per square foot for cementitious underlayment (leveling compound). As specified in Sections 093000 and 096500 new finish flooring shall include 1/4" thick cementitious underlayment (leveling compound) over entire square footage of existing floor areas scheduled to receive finish flooring. The Architect shall determine whether more or less cementitious underlayment (leveling compound) over existing floor areas is required. ADD TO or DEDUCT FROM the Contract Price the sum of _____

_____ Dollars ($_____) per square foot.

UNIT PRICE FOR SEALER ON CONCRETE FLOOR SLABS

Provide a unit price per square foot for concrete sealer. As specified in Section 096500 new finish flooring shall include concrete sealer over entire square footage of existing and/or new floor areas scheduled to receive resilient finish flooring. If moisture tests of concrete slabs indicate concrete sealer is not required, amount shall be DEDUCTED FROM the Contract Price: the sum of _____

_____ Dollars ($_____) per square foot.

UNIT PRICE FOR COMPACTED PENNDOT #2A LIMESTONE

The Base Bid shall include 2'-0" depth of overexcavation of existing subgrade below bottom of washed gravel subbase for the new interior concrete slab on grade and furnish and install subsequent compacted PennDot #2A Limestone (interior engineered backfill material), as specified in Section 312000. Include disposal of overexcavated subsoils off site. The Contractor's testing agency and Project Engineer shall determine any adjustments to the quantity/limits of work specified herein. For the adjustment of the amount of cubic yards of PennDot #2A Limestone, ADD TO or DEDUCT FROM the Contract Price the sum of _____

_____

_____ Dollars ($_____) per cubic yard.

UNIT PRICE FOR ITEM 1 – CONCRETE SIDEWALK
For the adjustment of the amount of square footage of concrete sidewalks, as described above, ADD TO or DEDUCT FROM the Contract Price the sum of _____

_____ Dollars ($_____) per square foot.

UNIT PRICE FOR ITEM 2 – 10" STORM WATER PIPE
For the adjustment of the amount of linear footage of 10" storm water piping, as described above, ADD TO or DEDUCT FROM the Contract Price the sum of _____

_____ Dollars ($_____) per linear foot.

UNIT PRICE FOR ITEM 3 – PLYWOOD ROOF DECK
For the adjustment of the amount of square footage of plywood roof deck, as described above, ADD TO or DEDUCT FROM the Contract Price the sum of _____

_____ Dollars ($_____) per square foot.

ALTERNATE BIDS
If there is to be no change in the contract price as a result of accepting an Alternate Bid, the bidders shall so indicate by inserting the statement "No Change" in the blank space relating to that particular Alternate.
Note: The Owner reserves the option to add or deduct the successful bidder's Alternate Bid price to/from the awarded contract at any time during the Contract Time.

ALTERNATE BID NO. G - 1
For the performance of work as described in Section 012300, Paragraph 1.03, **ADD TO** the Base Bid the sum of _

_____ Dollars ($ _____).
(Translucent polycarbonate-panel canopy assembly and related construction)

ADDENDA
In submitting this proposal, I acknowledge receipt of the following Addenda, and the cost, if any, of such revisions has been included in the bid sum:

Addendum No.	Dated	Addendum No.	Dated	Addendum No.	Dated
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

SIGNATURES

When the bidder is an individual:

Witness Name	Contractor's Name (Type/Print and Signature) (SEAL)
Witness Address	Contractor's Address
	Phone E-mail

When the bidder is a partnership:

Witness Name	Principal's Name (Type/Print and Signature) (SEAL)
Witness Address	Principal's Address
	Phone E-mail
	Principal's Name (Type/Print and Signature) (SEAL)
	Principal's Address
	Phone E-mail
	Principal's Name (Type/Print and Signature) (SEAL)
	Principal's Address
	Phone E-mail

When the bidder is a corporation:

	Corporate Name
	Corporate Address
	Phone E-mail
Attest:	
Secretary's Name	President's Name (Type/Print and Signature)
Secretary's Address	President's Address

(CORPORATE SEAL)

The _____ is a corporation organized and existing under the laws of _____and has (has not) been granted a certificate of authority to do business in Pennsylvania, as required by the Business Corporation Law, approved May 5, 1933, P. L. 364, as amended.

Non-Collusion Affidavit

1. The Non-Collusion Affidavit is material to any contract awarded pursuant to this bid. According to the Pennsylvania Antibid-Rigging Act, 73 P.S. 1611 et seq., governmental agencies shall require Non-Collusive Affidavits to be submitted with bids.

2. This Non-Collusion Affidavit must be executed by the member, officer, or employee of the bidder who makes the final decision on prices and the amount quoted in this bid.

3. Bid rigging and other efforts to restrain competition and the making of false sworn statements in connection with the submission of bids are unlawful and may be subject to criminal prosecution. The person who signs the Affidavit should examine it carefully before signing and assuring himself/herself that each statement is true and accurate, making diligent inquiry as necessary of all other persons employed by or associated with the bidder with responsibilities for the preparation, approval of submission of the bid.

4. In the case of a bid submitted by a joint venture, each party to the venture must be identified in the bid documents, and an Affidavit must be submitted separately on behalf of each party.

5. The term "complementary bid" as used in the Affidavit has the meaning commonly associated with that term in the bidding process, and includes the knowing submission of bids higher than another firm, any intentionally high or noncompetitive bid, and any other form of bid submitted for the purpose of giving a false appearance of competition.

6. Failure to file an Affidavit in compliance with these instructions will result in disqualification of the bid.

NON-COLLUSION AFFIDAVIT

Contract Name _____ Contract No. _____
State of _____ County of _____
I state that I am _____ of _____
(Title) (Name of Firm)
and that I am authorized to make this affidavit on behalf of this firm, and its owners, directors, and officers. I am the person responsible in this firm for the prices and the amount of this bid. I state that:

(1) The prices and amount of this bid have been arrived at independently and without consultation, communication or agreement with any other bidder or potential bidder.
(2) Neither the prices nor the amount of this bid, and neither the approximate prices nor approximate amount of this bid, have been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be discussed before bid opening.
(3) No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, or to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.
(4) The bid of this firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.
(5) _____ (Name of this firm), its affiliates, subsidiaries, officers, directors and employees are not currently under investigation by any government agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect with bidding on any public contract, except as follows: I state that _____ (Name of firm) understands and acknowledges that the above representations are material and important and will be relied on by the County of Mercer in awarding the contract for which this bid is submitted. I understand and this firm understands that any misstatement in this affidavit is and shall be treated as fraudulent concealment from the County of Mercer of the true facts relating to the submission of bids for this contract.

_____ _____
(Name) (Position)

_____

(Company name and address)

_____

Sworn to and subscribed before me this _____ day of _____ 2026

_____ My Commission expires _____
(Notary Public)

(Notary Seal)

END OF BID FORM SECTION 004116.1

SECTION 004513 - BIDDER'S PROOF OF COMPETENCY

1.01 COMPETENCY CRITERIA

A. In determining the lowest responsible bidder, the Owner will consider the bidder's integrity, efficiency, experience, promptness, financial responsibility, and ability to successfully and timely complete the project. The Owner will scrutinize the low bidder's information for full disclosure before a bid is awarded.

1.02 BIDDER'S RESPONSIBILITY

A. It is each bidder's responsibility to demonstrate its competency. Accordingly, the low bidder shall furnish to the Owner, if requested, within 24 hours of the bid opening the following information and materials:

1. How many years has your organization been in business as a Contractor?
2. How many years has your organization been in business under its present business name?
   a. Under what other or former names has your organization operated?
3. List the categories of work that your organization normally performs with its own forces.
   a. List the Work that you intend to perform with your own forces if you are awarded the Contract;
   b. List the percentage of the bid amount that represents the work you intend to perform with your own forces.
4. Three architect references, including their names, addresses, telephone numbers, and contact persons.
5. Three project owner references, including their names, addresses, telephone number and contact persons:
6. A current audited financial statement; however, a complete reviewed financial statement may be considered by the Owner if prepared in accordance with Generally Accepted Accounting Principles (including financial statement, footnotes, and auditor's review opinion) provided that additional information is available.
7. A Dunn & Bradstreet report, if available.
8. Evidence of satisfactory credit rating.
9. A statement of the bidder's current bonding limit from the Bidder’s surety or insurance agent; the name of the Bidder’s surety company and insurance company or companies, and proof of the rating of the Bidder’s surety and insurance companies (companies are required to be listed on the most current Federal Register, Circular 570, and hold an A. M. Best & Company rating of A- or Better).
   a) Proof of Insurance and Bonds must be on Surety/Insurance Company’s letterhead.
10. A listing of work in progress or under contract stating the following:
    a) The amount of the original contract
    b) The amount of all change orders to date
    c) The required substantial completion date.
    d) Estimated or anticipated date of certification of substantial completion
    e) Percentage of work completed and
    f) Name, address, telephone number and contact person(s) of the architect and construction manager or clerk of the works (if any).
11. A listing of all work completed during the last six (6) calendar years stating the following:
    a) The amount of the original contract.
    b) The amount of all change orders and their percentage of the Contract's total bid cost.

c) The required substantial completion date.
d) The actual date of certification completion and the date of final payment.
e) The name, address, telephone number and contact person(s) of the architect and construction manager or clerk of the works (if any) and the name, address and telephone number of the Owner.

12. A statement of whether the bidder, whether as a principal or an office of any predecessor or current entity, has defaulted or failed to complete on a construction project within the previous six (6) years and, if so, including information as to:
    a) The project
    b) The project owner
    c) The Architect and Construction Manager or clerk of the works (if any), and
    d) The circumstances of such default.
13. A listing of all claims made against any bonds issued for the bidder's performance, labor and material payment or maintenance within the past six (6) years identifying:
    a) The project and project owner.
    b) The surety, and
    c) The claimant
14. A listing of all arbitration proceedings or court proceedings completed or in progress during the last six (6) calendar years involving the bidder, identifying:
    a) Bidders' role in proceedings
        1) Did/Does bidder's role involve bidder's performance of any construction contract or warranty
    b) The parties to such arbitration or litigation
    c) The arbitrator, court or forum of such arbitration and litigation and
    d) The case or docket number of such arbitration or litigation
15. A listing of all claims made against bidder's workers' compensation and/or general liability insurance polices, and paid by bidder's insurance carrier(s) resulting out of construction projects on which bidder was awarded a contract, within the past six (6) calendar years identifying:
    a) The project and project owner
    b) The type of insurance(s) workers' compensation and/or general liability, and the insurance carrier(s)
    c) The claimant, the date of the claim and the event giving rise to the claim.
16. A listing of the names, titles and experience of officers, other principals and/or other key individuals in bidder's organization.
17. A listing of all construction projects within at least the six (6) prior calendar years on which the bidder has worked, identifying all items asked for in Sub-items 1.02.A.10 and 1.02.A.11 above, as well as the following:
    a) An identification of all change orders that resulted in the extension of time of completion of the project, and the aggregate number of days by which the original substantial completion date was extended thereby.
18. A statement regarding the bidder's prior experience working on a construction project involving multiple contractors.
19. A statement regarding the bidder's adherence to the Occupational Safety Health Act; the Pennsylvania Prevailing Wage Act; the Pennsylvania Steel Products Procurement Act; applicable federal and/or state statutes and regulations prohibiting discrimination on a Pennsylvania public works project; and/or all other applicable laws, regulations, acts as listed in the non-all-inclusive list of Article 13 in Section 007216 General Conditions.
    a) Regarding Bidder's adherence to OSHA requirements, Bidders shall submit their safety record, claims history, and any OSHA violations that have occurred in the past five years.

20. Include the following statement and signature lines verbatim as part of Bidder's Proof of Competency submission.

THIS IS TO AUTHORIZE THE PERSONS AND REFERENCES IDENTIFIED HEREIN, AS WELL AS ANY OTHER REPRESENTATIVES OF BUSINESSES/AGENCIES WITH PROJECTS WITH WHICH I OR MY COMPANY HAVE BEEN INVOLVED, TO SPEAK FREELY AND WITHOUT HESITATION TO REPRESENTATIVES OF THE OWNER, INCLUDING ITS ARCHITECT AND ATTORNEY RELATIVE TO ANY OF THE ABOVE MATTERS OR ANY OTHER SUCH PROJECTS, HEREBY RELEASING ALL PERSONS, FIRMS AND CORPORATIONS WHETHER NAMED HEREIN OR NOT, FROM LIABILITY OR FROM ANY ACTION, SUIT, CLAIM OR DEMAND ARISING OUT OF THE RELEASE OF SUCH INFORMATION.

_____

By:_____
(Title)

_____
(Address)

1.03 BID REJECTION

A. The failure to fully provide the foregoing information to the Owner or its representatives, may result in the rejection of the bidder's bid, at the sole discretion of the Owner.

1. Failure to disclose a past or current project in default or in arbitration/court proceedings is grounds for disqualification.

B. Additionally, any of the following shall subject the bidder to disqualification and his bid to rejection:

1. A bidder’s failure in the past to have timely completed the work in accordance with the construction contract documents, on a contract awarded to him by the Owner.
2. A bidder’s failure in the past to have prosecuted the work in accordance with the construction contract documents, on a contract awarded to him by the Owner.
3. A bidder who was awarded a construction contract with the Owner in the past, and whose contract with the Owner was terminated for cause.
4. A bidder who was awarded a construction contract with the Owner in the past, and whose contract with the Owner was declared to be in default.
5. A bidder on whose Performance Bond provided for the benefit of the Owner on a construction contract awarded by the Owner in the past, a claim was made and paid or otherwise adjusted by the Surety.
6. A bidder who has no prior, satisfactory experience working on a construction project involving multiple contractors.
7. Where a bidder has been involved on a construction project on which a significant delay existed between the date of issuance of a Certificate of Substantial Completion for the bidder’s work, and issuance of Final Payment to that bidder.
8. A bidder who has failed to comply with the Occupational Safety Health Act and/or its implementing regulations, and who has consequently been fined or otherwise subjected to civil penalties because of such noncompliance.

9. A bidder who has failed to fully comply with the Pennsylvania Prevailing Wage Act.
10. A bidder who has failed to fully comply with the Pennsylvania Steel Products Procurement Act.
11. A bidder who has failed to fully comply with applicable federal and/or state statutes and regulations prohibiting discrimination on a Pennsylvania public works project.
12. A bidder who has otherwise failed to fully comply with federal, state and/or local statutes, ordinances and/or regulations applicable to a Pennsylvania public construction project.
13. A bidder who has filed for bankruptcy, or who has been involuntarily placed into bankruptcy by his/its creditors, within five (5) years of the date of submission of his/its bid. This provision shall encompass predecessor corporations, partnerships, and/or other entities, and each of the principals involved in the bidding corporation, partnership or other entity.
14. A bidder who has, within the ten (10) years preceding the submission of his/its bid, been convicted by a federal or state court of a crime relating to his/its prosecution of a public works project in any jurisdiction within the United States. This provision shall apply to the entity submitting the bid, as well as to each of the principals involved in the bidding corporation, partnership or other entity.
15. A bidder who has a significant history of insurance claims paid, including but not limited to workers' compensation claims.
16. A bidder who has no prior satisfactory experience with critical path method (CPM) scheduling methods.
17. A bidder's failure to sign the Bid Form shall be conclusively treated as a nonresponsive Bid and the Bid shall be rejected.
18. A bidder who is currently under suspension or debarment by the Commonwealth of Pennsylvania, any other state, or the federal government, as specified in Section 002000.

C. By the submission of any bid, the bidder agrees that in the event its bid is rejected by the Owner for any reason and such rejection is contested by the bidder through the commencement of legal proceedings, whether in law or equity, the Owner shall be entitled to an award of reasonable attorney's fees and costs if the Owner's rejection of the contested bid is upheld, affirmed or otherwise not set aside.

END OF SECTION 004513

SECTION 007216 - GENERAL CONDITIONS

MERCER COUNTY AGRICULTURAL AND
CONSERVATION COMMUNITY
LEARNING CENTER AT
MUNNELL RUN FARM
41 MUNNELL RUN LANE
MERCER, PA 16137

FOR THE
MERCER COUNTY COMMISSIONERS
125 SOUTH DIAMOND STREET
MERCER, PA 16137
HHSDR #4826

The following AIA Document A201-2017, "General Conditions of the Contract for Construction" has been modified for specific requirements for this Project.

Any reference throughout the Contract Documents to a provision of AIA Document A201–2017, shall be to this modified AIA Document A201-2017.

Attachments following this Section:

Detailed Cost Breakdown Form

Material Source of Supply and Subcontractor Approval Form

Assignment of Rights Sales Use/Tax Refund Form

Contractor's Request for Stored Material Payment Form

Subcontractor/Supplier Payment Certification and Waiver of Liens Form

Payroll Certification Forms:
PA Department of Labor & Industry - Form LLC-25 Weekly Payroll Certification for Public Works Projects (formerly Form LIPW-128)

Request for Information (RFI) Form

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
Mercer County Agricultural and
Conservation Community
Learning Center at
Munnell Run Farm
41 Munnell Run Lane
Mercer, PA 16137

HHSDR #4826

THE OWNER:
Mercer County Board of Commissioners
125 South Diamond Street
Mercer, PA 16137

THE ARCHITECT:

HHSDR, Inc.»« »
«40 Shenango Avenue
Sharon, PA 16146

ADDITIONS AND DELETIONS:
The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

TABLE OF ARTICLES

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3 CONTRACTOR

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5 SUBCONTRACTORS

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7 CHANGES IN THE WORK

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9 PAYMENTS AND COMPLETION

10 PROTECTION OF PERSONS AND PROPERTY

11 INSURANCE AND BONDS

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13 MISCELLANEOUS PROVISIONS

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15 CLAIMS AND DISPUTES

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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. **The Contract Documents shall include Bidding Requirements, including, but not be limited to, advertisement or Invitation to Bid, Instructions to Bidders, the Contractor's Bid and Addenda or portions of the Addenda relating to any Bidding Documents.**

§ 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 If the Contractor has remedies available pursuant to the Agreement between the Owner and Contractor including these General Conditions, then the Contract Documents or other information supplied to the contractor in connection with this Project, including any deficiency, inconsistency or misrepresentation therein, shall not create any cause of action in favor of or against any third party whether such action may be for breach of contract, breach of warranty, negligence, misrepresentation or other tort, or otherwise including claims against the architect and its consultants, and their employees, officers and representatives.

.2 Except when Contractor is required to pursue a claim directly against another Contractor as directed elsewhere in the Contract Documents or its own subcontractors, Contractor agrees that any and all claims, disputes or legal actions filed or pursued by the Contractor in connection with this contract, the Contract Documents or the project, shall be filed or pursued only against the named Owner of the Project under the claims procedures set forth in this Agreement and that no claims or legal actions will be filed or pursued against the Owner's administrators, officers, directors, their employees, representatives, or its architect and/or their consultants, or their employees or representatives. Contractor agrees that this paragraph shall survive termination of this agreement. Contractor also agrees that this paragraph shall be binding whether or not it claims prior breach of this contract and that this paragraph shall apply to any and all claims including breach of contract, breach of warranty, negligence, misrepresentation or other tort, or otherwise.

§ 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.

§1.1.3.1 The Work shall include the obligation of the Contractor to visit the site of the project before submitting a proposal. Such site visit shall be for the purpose of familiarizing the Contractor with the conditions as they exist and the character of the operations to be carried on under the Contract Documents, including all existing site conditions, access to the site, physical characteristics of the site and surrounding areas.

§ 1.1.4 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

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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.

a. In the event of inconsistencies in the Contract Documents and/or between the Contract Documents and applicable standards, codes, and ordinances, the Contractor shall: (1) provide the better quality or greater quantity of work and; (2) comply with the more stringent requirements, in accordance with the Architect's interpretation. The terms and conditions of this Paragraph, however, shall not relieve the Contractor of any of the obligations set forth in Paragraphs 3.2 and 3.7.

§ 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.

§ 1.2.4 MISCELLANEOUS DEFINITIONS

.1 The term "product" includes materials, systems and equipment.

.2 The term "provide" includes furnishing and installing a product complete in place, tested and approved.

.3 The term "building code" and the term "code", refer to regulations of governmental agencies having jurisdiction.

.4 The terms "approved", "required", and "as directed" refer to and indicate the work or materials that may be approved, required or directed by the Architect acting as the agent of the Owner.

.5 The term "similar" means in its general sense and not necessarily identical.

.6 The terms "shown", "indicated", "detailed", "noted", "scheduled" and terms of similar import, refer to requirements contained in the Contract Documents.

.7 Where reference to "the Contractor" is made in AIA General Conditions of the Contract for Construction, Supplementary General Conditions and Instructions to Bidders, it shall mean "each" Contractor, unless specified otherwise.

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§ 1.2.5 The Contractor represents that it understands that the Contract Documents may (a) contain errors, omissions and/or inconsistencies; (b) that there may be representations made that are determined to be inaccurate or incorrect; and, (c) that the Owner may request that changes be made to the Contract Documents. Consistent with paragraph 1.1.2.1, the Contractor represents that when such issues occur on the project for which extra costs may result to the Contractor, the Contractor will only pursue such extra costs by requesting a change order in strict accordance with the change order requirements of this agreement and, to the extent any such change order is not agreed upon, shall only pursue claims for costs incurred in strict accordance with the claims procedures set forth in this agreement.

.1 Contractor acknowledges that the plans and specifications are intended only to show the intent of the completed Project. Contractor represents that it is qualified to construct the Project as depicted in the Contract Documents and to determine its own means, methods, techniques, sequences and procedures. To the extent that means, methods, techniques, sequences and procedures are identified in the Contract Documents, Contractor is required to independently evaluate those means, methods, techniques, sequences and procedures for the purpose of determining whether the means, methods, techniques, sequences and procedures depicted in the Contract Documents are adequate to construct the Project. Contractor further represents that it has based its bid upon its own determination of the means, methods, techniques, sequences and procedures required to construct the Project.

.2 If the Contractor asserts a claim against the Architect, Contractor agrees to limit the total liability of the Architect, its officers, employees, consultants and insurers to one-hundred thousand dollars ($100,000.00). This limitation of liability is applicable to any and all claims that can be asserted by the Contractor against the Architect. To the extent that a court of competent jurisdiction determines that the aforementioned limitation of liability is unreasonable, the Architect's liability shall be limited to the lowest legally sufficient amount to be an enforceable limitation of liability. The Architect, its officers, agents, servants, or employees shall not be liable to the Contractor for any indirect, special, consequential, or exemplary damages.

§ 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

§ 1.4.1 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.

§ 1.4.2 To the extent that the contractor makes a representation in the conditions of the Contract, any such representation is a contractual obligation required to be performed and is a representation to the Owner and Architect upon which each of them are entitled to rely.

§ 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.

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§ 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 only electronic format Contract Documents will be available in is portable document format (pdf); Contract Documents will not be available in any of these electronic formats: AutoCAD, Microsoft Word, Excel, etc.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model 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. 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.

.1 The Owner will expect the successful Contractors to enter into "No Lien" Contracts.

.2 The Bidder agrees and acknowledges that the Owner is a "contracting body" under the Public Works Contractors' Bond Law of 1967, and the Work on the Project is public construction and not subject to the filing of Mechanics Liens, and further agrees to provide and specify in its subcontracts with Subcontractors and Suppliers for their acknowledgment that their sole remedy against the Owner exists only under the provisions of the Bond Law and in accordance with the Payment Bond and to indemnify and hold harmless the Owner from any claim under the Mechanics Lien Law, filed by its Subcontractors and Suppliers.

.3 Contractor shall obtain and have recorded a waiver of liens from all sub-contractors. In addition, Contractor shall post a bond guaranteeing payment for labor and materials provided by subcontractors.

§ 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

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

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

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

§ 2.3 Information and Services Required of the Owner

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

§ 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 not be responsible for furnishing surveys (unless required for the execution of the work and requested by the Contractor in writing) or other information as to the physical characteristics of, legal limitations of or utility locations for the Project site, but shall furnish or cause to be furnished to the Contractor a legal description of the Project site, which shall not constitute one of the Contract documents. Contractor shall confirm the location of each utility, shall excavate and dispose of each on-site utility and shall cap each off-site utility as required by the Work and as may be included in the Specifications. The Contractor represents that it is familiar with the Project site and has received all information it needs concerning the condition of the Project site. The Contractor represents that it has inspected the location of the Work and has satisfied itself as to the condition thereof, including, without limitation, all structural, surface and subsurface conditions. The Contractor shall exercise special care in executing subsurface work in proximity of known subsurface utilities, improvements, and easements.

§ 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 No hard copies of Contract Documents will be provided to Contractor(s). The Contract Documents are available electronically for the Contractor to print (only in portable document format (pdf). Contractor(s) are required to print hard copies to be maintained on site, to be updated with Contract changes, and to be turned over to the Owner at completion of the work.

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.1 **Each Contractor shall at all times keep a complete set of their Contract Documents on the Project, in good order, in the Project Office for the use of the Architect, the Architect's Representative and the Owner, also refer to Subparagraph 3.11.1.**

.2 **Such other additional instructions or detailed drawings as are necessary for the proper execution of the work will be furnished by the Architect.**

§ 2.3.7 The Owner may have an Owner's Representative (Clerk of the Works) on the Project. Any dispute relative to quality of materials or work, or the manner of performing the work, shall be referred to the Architect for a decision. The Contractor shall extend to the Owner's Representative the same privileges with regard to access and cooperation as are extended to the Architect.

§ 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.

§ 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.

.1 **Execution of the Contract by the Contractor is a representation that the Contractor has thoroughly reviewed and evaluated the Contract Documents to determine whether the Contractor needs clarification or additional information of the contract documents or additional interpretation of the intent of the Contract Documents to determine its bid and that it has requested any needed clarification prior to submitting its bid. Contractor represents that it has the knowledge, skill and expertise to perform the work; that it understands that it must make reasonable inferences to determine portions of the work not shown in the Contract**

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Documents that would be required for a proper and complete project, and it has included all costs for such inferences in its bid; and, that contractor is not relying on representations from the contract documents for the purpose of determining the means, methods, sequences or procedures of performing the work.

§ 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.

.1 The Contractor shall be responsible for all work usual and customary to his specialization, unless specifically designated otherwise, whether it is indicated in the Contractor's Contract Documents or in other Contractor's Drawings. A copy of all related Drawings as listed in Section 000115, List of Drawings, shall be issued to all prospective Contractors for purpose of bidding as well as for construction of the project.

§ 3.2.3 It shall be the obligation of the Contractor to review the Contract Documents to determine and to notify the Owner and the Architect of any discrepancy with the building codes and regulations of which the Contractor has knowledge or should be reasonably able to determine. The Contractor shall not violate any zoning, setback or other locational requirements of applicable laws, codes and ordinances, or any recorded covenants of which the Contractor has knowledge. If the Contractor observes that portions of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, rules or regulations, the Contractor shall notify the Owner and Architect in writing, and necessary changes shall be accomplished by appropriate Modification.

§ 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.

§ 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.

.1 The General Contractor is designated as the Lead Contractor for the Project. The Lead Contractor and other Prime Contractors are responsible for the coordination of the work. The Lead Contractor is responsible for making all coordination decisions not mutually agreed to by the affected Prime Contractors. Disputes between the Lead Contractor and one or more other Prime Contractors, and disputes between two or more Prime Contractors pertaining to the creation, application, and modification of the project schedule, the furnishing of resources to meet the project schedule, job coordination, and all aspects of the coordination, means and methods of construction shall be submitted promptly to the Lead Contractor for a final construction decision. The final construction decision of the Lead Contractor must at all times be consistent with the content and intent of the Contract Documents. The final construction

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decision of the Lead Contractor will be observed, accepted, and fully followed by all Prime Contractors and their Subcontractors on the project. The progress of the work in accordance with the final construction decision of the Lead Contractor shall not be delayed. The contractors, including the Lead Contractor, shall have no right of action against the Owner, Owner's Representative, or Architect in connection with any cost, loss, or delay suffered resulting from issues involving coordination of the Contractors' Work or a decision regarding the coordination of the Contractors' Work.

§ 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.

.1 Contractors whose failure to perform their Work or whose negligence in performing their Work, impacts other Contractors shall be responsible for damages incurred by the other Contractors that are necessary to maintain the project schedules.

.2 Contractors shall be responsible to protect their installed work until such work is turned over to and accepted by the Owner in writing. Any damage to such work shall be corrected by the Contractor initially responsible for the work, regardless of how the damage was sustained. Contractors shall refer to Paragraph 6.2.3.1 regarding claims against each other for work damaged by another Contractor.

§ 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.

§ 3.3.4 After Award of Contract, any claims for additional costs associated with completion of the Work within the required Contract time frames will not be considered. Contractors, who feel extra time, in any form such as shift work, overtime, and premium time, is necessary to meet Contract requirements regardless of trade, should include these costs in their bids. Contractors must recognize that although their work might not require shift, overtime, or premium time work for completion within the stipulated time frame, it may be required in order to allow other Contractors to complete within the time frame. Contractors must allow for these overtime requirements and include the costs necessary to allow the other Contractors to complete within the specified time. Failure to recognize the extra costs in his bid shall not relieve the Contractor from utilizing shift, overtime, or premium time work in performance of his Contract nor entitle him to additional compensation. Where installation work is part of the contract, all costs associated with meeting the time frames indicated in the construction schedules shall be included in the contract price.

§ 3.3.5 If the Contractor fails to supervise his workmen or subcontractors, the Owner shall withhold monies sufficient to protect the Owner's interest.

§ 3.3.6 No verbal agreement or conversation with any officer, agent or employee of the Owner or Architect, either before or after the execution of the contract, shall affect or modify the terms or obligations herein contained. Failure to comply with any or all of the above requirements will not relieve the contractor from the responsibility of properly estimating the difficulty or cost of successful completion of the work, nor from the responsibility for the faithful performance of the provisions of this contract.

§ 3.4 Labor and Materials

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

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect **according to Section 012513**.

§ 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.

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§ 3.4.4 The Contractor shall inform all workers on the Project of proper conduct expected of them by the Owner at all times. Obscene gestures, obscene pictorial, printed and/or written expressions and the use of profanity by the workers is forbidden.

§ 3.4.5 Smoking is prohibited from all areas of the facility (interior and exterior) in compliance with state and federal legislation. "Smoking" shall mean all uses of tobacco, including, but not necessarily limited to, cigarettes, cigars, pipes, chewing tobacco, snuff, and electronic nicotine delivery systems (ENDS) or vaping devices.

§ 3.4.6 The Contractor shall assure that his employees comply with the following:

- **.1 The contractor is solely responsible for the safety of his employees and to assure compliance with OSHA rules and regulations as stated in the project specifications.**
- **.2 Construction security means that the Contractor shall be responsible to protect and secure his own tools, equipment and materials. He is also responsible to protect the Owner's property and facilities which he occupies or uses.**
- **.3 Workers shall not operate radios, CD players, "Boom Boxes", or similar devices that may be a nuisance to surrounding buildings.**
- **.4 Stay out of building areas which are not a part of construction.**
- **.5 Dress in accordance with OSHA requirements.**
  - **a. Clothing shall not bear references to tobacco, drugs, alcoholic beverages, and/or profanity.**
- **.6 Do not use any facility, materials or equipment without specific permission.**
- **.7 No use of existing building restrooms.**
- **.8 Workers shall not possess or consume drugs, alcoholic beverages, and/or other controlled substances when on site.**

§ 3.4.7 The Contractor shall be responsible for enforcing the standards of conduct referenced in this Article 3.4.

§ 3.4.8 The Owner shall have the right to have the Contractor remove from the site all workers in violation of the above stated standards of conduct.

§ 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, **including substitutions not properly approved and authorized,** 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.

§ 3.5.3 All materials and workmanship shall be guaranteed for a minimum of one year from date of Final Payment for the entire Project, except where a longer period is specified, and each Contractor shall make good without cost to the Owner any defective portion of the work of which he is notified within one year of the date of final payment of contract. Refer to Section 007316 – Insurance Requirements for required "Maintenance Bond". Repair or replacement of such defects shall extend to other work damaged thereby. Owner's rights and remedies hereunder shall be in addition to any other rights and remedies which Owner may have pursuant to law or this contract. Owner shall be entitled to all other rights and remedies provided by this contract and by law, in addition to the Warranty rights and remedies set forth in this paragraph.

§ 3.6 Taxes

§ 3.6.1 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.

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§ 3.6.2 Access to Accounting Records: The Contractor shall check all materials, equipment and labor entering into the Work and shall keep such full and detailed accounts as may be necessary for proper financial management under this Agreement, and the system shall be satisfactory to the Owner. The Owner or its representative shall be afforded access to all the Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and such similar data relating to this Contract, and the Contractor shall preserve all such records for a period of twelve (12) years, or for such longer period as may be required by law, after final payment.

§ 3.6.3 The Contractor shall be aware that the Project Owner is a Pennsylvania tax exempt entity, and that Pennsylvania Sales and Use Tax must be paid for all materials and equipment with the exception of certain Building Machinery and Equipment (BME) as defined in applicable law (PA Act 45 of 1998). The Contractor is solely responsible to determine whether certain purchases within his Contract may be tax exempt for the Project Owner and whether the Owner may benefit from the Contractors reduction of said taxes in the calculation of his bid.

.1 Contractors are encouraged to take advantage of any sales tax exemptions for which Owner is entitled in computing the bid amount.

.2 Contractors intending to purchase certain BME exempt from sales tax shall recognize that they must submit a Pennsylvania Department of Revenue Sales Tax Exemption Certificate (Form REV-1220) to their supplier(s) in accordance with applicable law, without benefit of the Owner's tax exemption number and/or Federal ID Number (EIN); the form should contain the statement, "Property or services qualify as building machinery and equipment, and will be transferred pursuant to a construction contract to [name of Owner]." The Owner will not provide their tax exemption number and/or Federal ID Number (EIN) to any Contractor, subcontractor, material supplier or other entity in assisting in making of tax-exempt purchases.

.3 Regardless of whether Contractor has taken advantage of certain BME sales tax exemptions in the calculation of his bid, the Contractor shall be required to submit a signed and notarized "Assignment of Rights Sales / Use Tax Refund" form, as hereafter specified, as well as, assist the Owner in filing of all Petitions for Refund with the Commonwealth's Board of Appeals for taxes paid on tax exempt purchases for the Project.

.4 Contractors shall submit to the Owner a letter identifying all materials purchased exempt of sales tax in their Contract, in order to assist the Owner seeking any refund on tax exempt items.

§ 3.6.4 Assignment of Refund Rights: The Contractor agrees to assign and transfer to the Owner all his rights to sales and use tax which may be refunded as a result of a claim for refund for materials purchased in connection with this Contract, regardless of whether Contractor has taken advantage of certain non-taxable Building Machinery and Equipment (BME) in the calculation of his bid. The Contractor further agrees that it will not file a claim for refund for any sales or use tax which is subject to this assignment.

.1 Each Prime Contractor further agrees that he will assist the Owner in the preparation and submission of petitions for refund pertaining to those taxes.

.2 Contractors shall be required to submit a signed and notarized "Assignment of Rights Sales / Use Tax Refund" form, within the time period specified for initial submittals in Section 011000. Sample form included following these General Conditions.

§ 3.6.5 Contracts with Subcontracts: The Contractor agrees to include the "Access to Accounting Records" and "Assignment of Refund Rights" paragraphs, in full, in any contracts with subcontractors.

§ 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 all 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.

.1 The Owner shall obtain the Building Permit for the entire project and pay all initial permit fees associated with the Building Permit under the UCC. All Contractors shall assist the Owner in obtaining the permit and shall cooperate in the notification of all required inspections under the scope of their contracts as pertains to the building permit and/or construction work, including paying for required inspections if not included in the initial building permit fee to the Owner. Each Contractor shall be responsible for obtaining and paying for all third party inspections

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required under the scope of their contract as pertains to the UCC, PA Statewide Building Code. Each Contractor shall also be responsible for paying all costs associated with any re-inspections required as a result of incomplete/incorrect work.

.2 Each applicable Contractor shall make cash deposits required by Authorities having jurisdiction and shall pay for any and all fees, permits, road bonds, inspections and certificates as may be required for their work as well as for the repairing of streets, alleys, curbs, sidewalks, underground structures, sewers, mains and public or private property damaged as a result of execution of the work, and shall pay such fees as are required for moving of equipment required for the work. All permits, bonds and certificates must be submitted to the Architect.

.3 Each applicable Contractor(s) shall arrange to obtain all required general construction and/or HVAC, plumbing, and/or electrical equipment/system operating certificates from appropriate agencies, and shall make necessary deposits and pay for fees, permits, inspections and certificates as may be required for the work. All permits and certificates must be submitted to the Owner.

.4 The Contractor shall contact the local authorities regarding any ordinances which may restrict early morning, late evening, and/or weekend work hours, as well as any restrictions regarding access routes to the site.

.5 The General Contractor shall secure and pay for any required permit for temporary site identification signage.

§ 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 Cash allowances are not included in the bid specifications.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in

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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.

.1 **The Contractor's Superintendent shall be employed full time on the Project site during performance of all work under the Contractor's responsibility, including but not limited to, all work performed by Contractor's subcontractors. The Superintendent shall, on a full-time basis, manage, supervise, and direct all of the Work being performed by the Contractor's employees and all subcontractors.**

§ 3.9.2 The Superintendent shall be satisfactory to the Architect and Owner, and the Contractor shall not replace the Superintendent without the prior written consent of the Owner, which consent shall not unreasonably be withheld.

§ 3.9.3 The Contractor shall furnish a fully qualified and competent project superintendent subject to the approval of the Owner. At a minimum, the superintendent shall have at least ten (10) years experience of progressive experience as a construction superintendent.

§ 3.9.4 The proposed superintendent shall possess strong supervisory, project scheduling and management skills and excel in planning and directing complex projects. The proposed superintendent shall be able to analyze plans and specifications to determine that time frame, staffing requirements, and appropriate resources are available for various phases of construction; direct and coordinate all construction activities to maintain optimum efficiency of operations and effectively utilize human resources, machinery and equipment; establish work plans for each construction phase, assign duties, provide technical advice, prepare schedules, and set deadlines to ensure timely completion of work.

§ 3.9.5 The Contractor shall submit the qualifications of the project superintendent to the Owner for approval in the form of a resume that shall include a list of major projects, certifications and affiliations. The written qualifications also include a detailed list of training seminars and evidence of certifications/credentials, etc. The Owner also reserves the right to conduct a personal interview of the prospective superintendent , in addition to the above requirements.

§ 3.9.6 Under no circumstances shall work commence on the project site until the contractor's designated project superintendent has been approved by the Owner. If the Owner rejects the Contractor's project superintendent, the Contractor shall submit the name of an alternate superintendent for the Owner's consideration.

§ 3.9.7 The approval of a contractor's project superintendent shall not, under any circumstances, be considered a waiver of the contractor's obligation to perform the work according to the terms of the contract documents.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The **General** Contractor **(Lead Contractor for the Project)**, promptly after being awarded the Contract **(within the time period specified for submittals in Section 011000), shall submit to the Architect and the Owner's Representative a comprehensive construction schedule, indicating dates for beginning and completing the various subdivisions of the work. The scheduling requirements are set forth in detail in the contract and in the specifications. By submitting its bid and by executing the contract the contractor represents that it understands that the scheduling requirements are intended to place the burden of early planning, active coordination and communication regarding the planned work on the Contractor and that the purpose of the scheduling requirements is an essential part of meeting that contractual burden. Any failure by the contractors to comply with any scheduling requirement shall be a material breach of this Contract and if the Contractor fails to comply strictly with any such requirements, Contractor shall not be entitled to make any claim for any damages that occur because of impacts to its work or delays, whether or not the Owner has also materially breached its contract by failing to perform in accordance with its obligations or actively interfering with the contractor's work on the project. Other Contractors shall coordinate the requirements of their work with the General Contractor so that the construction schedule(s) will indicate the obligations of each Contractor for uninterrupted performance of the work to the date of completion. The schedule(s) shall be reviewed by the Owner's Representative, Architect, Owner and all Contractors. Each Contractor, the Owner's Representative, Architect and the Owner shall receive a copy of**

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the reviewed and revised construction schedule(s). The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. **The Schedule shall not be modified or extended without prior approval of the Owner in each instance**.

.1 **Construction schedules representing anything less than a five day work week shall not be permitted.**

.2 **Coordination of the work between contractors shall include, but is not limited to, exchange of information about the extent of work, duration of work, identification of work required by others to facilitate the work and the required start, duration and finish times for the work activities.**

.3 **Contractors shall submit all construction schedule information for coordination with the General Contractor, and the construction schedule shall be approved and signed off by all Contractors and reviewed by the** Owner's Representative**, Architect, and Owner, prior to approval of any Contractor's first payment application. Monthly updates to the construction schedule shall be submitted with Contractor's applications for payment each month, as stated in Paragraph 9.3.1 of this Section.**

.4 **Failure of the Contractor to submit construction schedules by the dates specified shall result in Architect's not approving Contractor's application for payment that month.**

.5 **By submitting an application for payment, Contractor represents that it has met each and every scheduling requirement up to that period covered in the application. Contractor agrees that no waiver of any scheduling requirement can occur unless the contractor indicates in writing that it does not intend to perform such requirement before such requirement is due to be met and OWNER ACKNOWLEDGES IN WRITING THAT THE CONTRACTOR IS RELIEVED OF ITS OBLIGATION TO PERFORM THE REQUIREMENT.**

.6 **The General Contractor shall utilize the Critical Path Method (CPM) for scheduling all work and shall provide, for record purposes, the Architect and** Owner's Representative **with electronic data files (on useable and standard discs) of each submittal of construction schedules (base line, monthly, etc.) in addition to the hard copies specified above.**

§ 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 **consistent with the time expressly set forth in the contract documents**. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall 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 maintain and 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 paper copy, available to the Architect and Owner the paper and electronic copies shall be 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.

.1 **The Contractor shall submit to the Architect, the names and addresses of all sources of materials, including manufacturers, products, and subcontractors to be used on the Project as stated in Paragraph 5.2.1 of this document. Submissions shall be made within the time period specified for Submittals in Section 011000. No materials shall be delivered to the site prior to the Architect's approval of the source of supply. Forms for submission will be available from**

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the Architect. If the Owner or the Architect has reasonable objection to any proposed material or source of material, or subcontractor, the Contractor shall submit a substitute to whom the Owner or the Architect has no reasonable objection, and the Contract sum shall be unchanged as a result of any such substitutions.

.2 Failure of the Contractor to submit Material Source of Supply, Shop Drawings, and Color Samples by the dates specified shall result in Architect's not approving Contractor's application for payment that month.

§ 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.

.1 All materials submitted as samples shall be properly labeled and delivered to the Architect's office. Materials will be examined by the Architect and, if approved, will be signed, dated and delivered to the project site. Approved samples shall remain on the project site for use in checking the material or equipment incorporated in the work.

.2 In instances where materials will affect the color planning of the work, samples of the colors will be submitted for approval and selection by the Architect within the time period specified for Submittals in Section 011000.

.3 Samples of materials which the Architect deems necessary to be tested shall be submitted in duplicate to approved testing laboratories. The Architects decision as to those materials requiring laboratory testing shall be final. The Contractor shall prepare and forward to testing laboratory all materials requiring tests, shall pay for all expenses involved in connection thereof and shall cause the testing laboratory to forward the results directly to the Architect.

§ 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. **The Contractor's obligations are not changed by an approval of any shop drawing or other submittal. If the contractor intends that a change to the Contract be made by any information in a shop drawing, he will affirmatively state that the shop drawing depicts a change in the work and will submit a written request for change order in sufficient time for the Architect to understand that a change order is being requested before the time the Architect's approval of the shop drawing is required. No notation, mark or other comment by the Architect on a submittal or in a response to a Request for Information shall constitute a change in the Contract. If the Contractor asserts that any notation, mark or comment by the Architect contained in a submittal or response to a Request for Information will change the Contract, the contractor will immediately follow the procedures set forth in paragraph 15.1 to request and pursue a change in the Contract.**

§ 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.

.1 Contractor agrees to submit all Submittals to the Architect for review together with all other submittals necessary for the review of the particular Submittal. If all submittals necessary for a review of the particular Submittal are not made simultaneously, the Architect shall return the Submittal with a written request for it to be resubmitted with the particular Submittals necessary for the Architect's review. In such cases, the Architect's time for reviewing the submittal will begin when it receives the necessary submittals for review of the particular Submittal.

.2 All submissions of materials, samples, shop drawings or product data to the Architect shall be accompanied by a letter of transmittal from the Contractor listing Project name, date, items and numbers of drawings or product data sheets contained in the submission.

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.3 The Contractor shall submit to the Architect for his review, Shop Drawings and/or Product Data of all items requested by the Architect and by the appropriate sections of the Specifications. The Shop Drawings, Submittals, and Product Data may be made electronically by email to the Architect's designated representative identified at the Initial Job Conference or as otherwise designated, or by sending two hard copies of the submittal to the Architect's office to the attention of Architect's designated representative identified at the Initial Job Conference or as otherwise designated (one set for the Architect and one set for the Owner). Emailed submittals are preferred in 8 ½" x 11" format, but also acceptable in maximum 11" x 17" format. Submittals larger than 11" x 17" format shall be submitted via two hard copies to the Architect's designated representative. The Architect will return one electronic copy (scanned PDF) showing the Architect's comments and review status of the submittal. The Contractor shall be responsible to produce his own paper copies as required and to coordinate work with all trades. No Shop Drawings or Product Data shall be submitted prior to the submission and Architect's approval of the Source of Supply. Shop Drawing shall give complete information necessary and shall be made in conformity with the best modern practice. Reproduction of any type made directly from the Architect's design documents will not be acceptable as shop drawings. All Shop Drawings and Product Data shall bear the name of the Project. All Shop Drawings and Product Data shall be approved by the Contractor prior to submission and shall bear the Contractor's approval stamp, signature and date of approval, as well as the name of the individual who reviewed the submission and found it to be in compliance with the Contract Documents.

- **a. Contract Documents will not be available in electronic format, i.e., AutoCAD, Microsoft Word, etc., for use by Contractors in preparation of Shop Drawings.**
- **b. Electronic submission of shop drawings will be permitted as set forth above.**
- **c. The Contractor shall not send Submittals of any kind through Project Management Software.**

.4 Once the Architect has reviewed and accepted a Shop Drawing submittal, all copies not required by the Architect, Engineer, and/or Owner's Representative **will be returned to the submitting Contractor. The submitting Contractor shall be responsible for distributing acceptable, as stamped by the Architect or Engineer, Shop Drawings to all other Prime Contractors requiring coordination of said work. "Acceptable" or "Reviewed" as stamped by the Architect or Engineer shall be defined as the Shop Drawing does not require "Resubmission" by the Architect or Engineer.**

.5 Upon completion of the Project, the Contractor shall issue two hard copies of all approved Shop Drawings, Submittals and Product Data with the Operations and Maintenance Manual.

§ 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 reviewed by the Architect.

§ 3.12.8 The Work shall be in accordance with reviewed submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's review 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 review 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

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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.

§ 3.14.3 Each Contractor is responsible for the size and location of all chases and openings required for the proper installation of all work in their contract and shall be responsible for all cutting and patching for such chases and openings.

.1 Where existing equipment/fixtures are to be removed and no new equipment/fixtures are to be installed in that location, the Contractor removing the item is responsible for patching the opening to match adjacent materials. Surrounding surfaces shall be thoroughly cleaned of all previous paint overruns, caulking, discharged dirt, etc., by said Contractor. Surfaces include exterior and/or interior locations.

§ 3.14.4 The General Contractor, however, will construct or have built into the building walls and partitions in new construction and renovation areas all such chases as are necessary, providing the General Contractor is notified of such openings and chases by the other Contractors.

§ 3.14.5 Contractors requiring chases built into new construction shall furnish the General Contractor with detailed drawings showing the size and location of each and every chase. If this information is not transmitted before the walls, partitions, etc. are built, then the General Contractor will not be liable for the cost of the construction of these chases and openings and they will then be built by the General Contractor but at the expense of the Contractor concerned.

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§ 3.14.6 Unless otherwise provided, each Contractor shall furnish and install all sleeves, thimbles and inserts necessary for the installation of their work at the proper and exact location and in sufficient time as not to impede the work of any other Contractor.

§ 3.14.7 Any cost due to defective or ill-timed work shall be borne by the party responsible.

§ 3.14.8 Site Work Utility Trenches: Trenching and backfilling shall be by the contractor, additionally, trenches occurring in areas not designated to receive new finishes shall be resurfaced/seeded to match existing: Utility trenches (gas, storm, water, sanitary, electric, etc.) installed through existing surfaced areas shall be backfilled with compacted fill and patched with bituminous paving and/or concrete as may be required in a thickness equal to the existing surface material. Trenches installed through existing non-surfaced areas shall be backfilled with compacted fill and re-seeded to match existing.

§ 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.

.1 The General Contractor shall provide rubbish containers, as specified in Section 015000 (Temporary Facilities and Controls), and pay for the removal of rubbish and debris from the project site. All Contractors are responsible for the removal and depositing of their rubbish and debris into containers and establishing a payment plan to the General Contractor for use of said containers, as specified in Section 015000.

§ 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

§ 3.16.1 The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.16.2 Job conferences will be held while construction is in progress. Each Contractor's representative shall be in attendance. The Contractor shall cause representative of all Sub-contractors designated by the Architect also to be in attendance. All such representatives shall have such authority as is necessary to bind their respective principals. The schedule of conferences will be determined by the Architect. At the job conferences all representatives shall be prepared to state the amount of their respective portion of work completed during the previous work period and what portion is scheduled to be undertaken during the upcoming work period. Contractors' reports shall reference the corresponding dates and anticipated work itemized on the reviewed comprehensive construction schedule. Problems of co-ordination and clarifications shall be reviewed and discussed at these conferences. Failure by the Contractor to provide such representation shall result in the Architect withholding monies from that Contractor's Monthly Application for Payment and/or withholding certification of the entire monthly application for payment.

§ 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.

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§ 3.18 Indemnification

§ 3.18.1 The Contractor shall indemnify, defend and hold harmless the Owner, Owner's Representative, **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 and defense costs, arising out of or resulting from performance of the Work, to the extent caused in whole or in part by the acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts or omissions 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 which would otherwise exist. The Contractor agrees to and does hereby assume on behalf of the Owner and Architect the defense of any action at law or in equity which may be brought against such indemnified parties by reason of claims for which indemnification is owed hereunder, and will pay on behalf of such parties, upon their demand, the amount of any judgment that may be entered against any of them in any such action. In the event that any claim, loss, cost, expense, liability, damage or injury arises or is made, asserted, threatened against the Owner for which the Contractor or its insurer does not admit coverage, or if the Owner reasonably determines such coverage to be inadequate, the Owner shall have the right to withhold from any payments due or to become due to the Contractor an amount sufficient to protect the Owner from such claim, loss, cost, expense, liability, damage or injury, including attorneys' fees and expenses reasonably necessary for the defense thereof.**

§ 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.

§ 3.19 SANITARY PROVISIONS

§ 3.19.1 The General Contractor shall provide and maintain sanitary provisions (temporary toilet facilities) as specified in Section 015000 (Temporary Facilities and Controls).

§ 3.20 TEMPORARY UTILITIES (WATER, ELECTRIC, HEATING AND VENTILATING)

§ 3.20.1 Refer to Section 015000 (Temporary Facilities and Controls).

§ 3.21 MAINTAINING EXISTING SYSTEMS

§ 3.21.1 Refer to Section 015000 (Temporary Facilities and Controls).

§ 3.22 FIELD OFFICES AND SHEDS

§ 3.22.1 Refer to Section 015000 (Temporary Facilities and Controls).

§ 3.23 BLASTING

§ 3.23.1 No blasting shall be performed on the Project Site.

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

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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.

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§ 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 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 Contractor's Request for Information shall be submitted on the form provided by the Architect. The Contractor shall not submit Requests for Information through any Project Management software or upon any other type of form prepared by the Contractor.** The Architect's response to such requests will be made in writing within**fifteen (15) business days of receipt of written request for information**. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information. **No delay shall be recognized concerning the time for the Architect's response, until 15 business days after a written request for information has been received by the Architect and the Architect has not provided a response.**

.1 The Contractor shall submit written Requests For Information (RFI) to the Architect a minimum of fifteen (15) business days prior to requiring the information and/or clarification to carry out the work.

.2 Requests for Information, submitted to the Architect, will not be accepted and will be returned un-answered for any of the following:

i. Dimensions, unless such dimensions cannot be determined from field measurements and/or from associated dimensions shown throughout the drawings, sections, details, and/or technical specifications.

ii. Substitutions. Substitutions may only be submitted on Form 012513.25 according to Section 012513.

iii. Coordination issues between trades/Contractors.

iv. Partial and/or fragmented Shop Drawing submittals, i.e., details, data sheets, etc., are not to be submitted as Requests for Information.

.3 The Architect will charge the Contractor for his time involved in responding to Requests for Information that can be answered from information shown elsewhere throughout the drawings, sections, details, and/or technical specifications; and/or that can be resolved through coordination of trades/Contractors involved.

.4 The Architect's form for "Request for Information" submittals is attached following these General Conditions.

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.

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

§ 5.2.1 The Contractor, within the time period specified for submittals in Section 011000, shall furnish in writing to the Owner through the Architect (1) the name, trade, and subcontract amount for each subcontractor, (2) the names of all persons or entities proposed as manufacturers of the products identified in the specifications (including those who are to furnish materials or equipment fabricated to a special design) and, where applicable, (3) the name of the installing subcontractor, on "Material Source of Supply" form as included following these General Conditions and as provided by the Architect. 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. **And the Contract sum shall be unchanged as a result of any such substitutions.**

§ 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.

§ 5.2.5 The Contractor shall not contract with sub-contractors for more than 85% of the Contractor's Work for this Project. A minimum of 15% of the Contractor's Work must be completed by the Contractor.

.1 100% of a sub-contract must be completed by the sub-contractor's own employees; labor sub-contracts shall not be sub-sub-contracted.

§ 5.3 Subcontractual Relations

§ 5.3.1 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, 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.

§ 5.3.2 Contractor must include all provisions of this contract in its Subcontractor agreements binding its subcontractors to the same extent the Contractor is bound herein. In addition, Contractor must specifically insert (and not just incorporate) provisions requiring the Contractor's subcontractors to indemnify, hold harmless and defend the Owner, Architect, and their consultants, administrators, officers and employees (including waiver of worker's compensation statutory protection) to the same extent the Contractor is bound by the Contract.

§ 5.3.3 Except as may be otherwise provided in these General Conditions, Sub-Contractors may make claims only against the Contractor with whom the Sub-Contractor has entered into an agreement to perform work.

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§ 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 **with the Lead Contractor of the project. The General Contractor is the Lead Contractor. The Lead Contractor and other Prime Contractors are responsible for the mutual coordination of the work of the Project and with the Owner's own forces. The Lead Contractor and other Prime Contractors shall prepare Construction Schedules as stated in Paragraph 3.10.1. The Lead Contractor is responsible for making all coordination decisions not covered by the mutually prepared Construction Schedule as stated in Paragraph 3.3.1.1.**

§ 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, 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

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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

§ 6.2.3.1 If a Contractor, its agents, servants, employees or sub-contractors, including the sub-contractor's agents, servants or employees, cause damage to the property or Work of another Contractor, cause delay or interference to any other contractor or cause any other additional expense or damage, the Contractor shall make claims only against such other Contractor or Contractors who was or were the cause of such expense or damage in whole or in part, and shall settle by agreement or, if unable to settle, by binding arbitration by filing such unresolved claim with the American Arbitration Association pursuant to the Construction Industry Arbitration Rules then in effect. The Contractor agrees that such disputes will not delay the project. The Contractor acknowledges and agrees that neither the Owner nor the Architect shall be a party to such claim or dispute between the Contractors, even if the Owner or Architect were in part to blame for such damage. The Contractor also acknowledges and agrees that the rights of the Owner to withhold payment to another Contractor, terminate another Contractor, or to demand compliance by another Contractor with the terms of the Owner's contract with that other Contractor are rights of the Owner, and that the Owner is not required to take advantage of or act upon its rights for the benefit of the Contractor. In addition, the failure of the Owner to take advantage of or act upon its rights under contracts with other Contractors shall not constitute active interference of the Owner. It is agreed that the intent of this subparagraph is to create a right of action for the benefit of each of the Contractors on the Project to and for each other to the extent described hereinabove and serves to raise the Contractors on the Project to the status of Third-Party Beneficiary of each of the other Contractors' contracts only as to the right of action described in this subparagraph.

§ 6.2.3.2 The Contractor, by entering into the Contract for Construction assumes duties to cooperate with the other Contractors to coordinate their Work with other Contractors' Work and to accomplish all of the Contractors' Work within the time established in the Contract Documents.

§ 6.2.3.3 The Contractor agrees that the right of action contained in this subparagraph is provided as valuable consideration to the Contractor, and the Contractor, acknowledges and agrees that claims against the Owner and Architect for damages resulting from other Contractors, as described hereinabove, are hereby prohibited.

§ 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,

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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.

.4 No work shall be performed until Change Orders have been issued and signed as per Change Order requirements, except in case of emergency as described in Article 10, subparagraph 10.6.1. In such case the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss.

§ 7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Section 7.3.3. The Contractor represents that any change order agreed between the Owner and Contractor on this project will include all costs associated with the additional work described in the change order, including all costs of associated delay, acceleration, inefficiency and overhead, as well as costs of material, labor and supervision. To the extent that any request for change order or correspondence prior to the signed change order is contrary to this paragraph, such requests or correspondence shall have no effect.

.1 The Contractor represents that it has the skills, expertise and cost accounting programs and/or tools necessary to maintain a record of all costs associated with any change in the work and that it will maintain a complete record of all costs associated with a change at the time such costs are incurred. The Contractor will create a cost item in its cost recording system for each change for which it intends to request a change order. At the time the Contractor requests a change order, it will identify the cost reporting reference number and will provide all supporting documentation maintained by the Contractor for all labor and material costs, including certified payroll, invoices, record of equipment costs and costs for overhead, supervision and tools. The Contractor will update its cost system as necessary to capture all costs associated with a change in the work and will regularly update the Owner as costs are incurred for which it desires to be paid. Once a change order is issued for a change in the work, the contractor shall not be entitled to any other costs or damages, including but not limited to any costs for inefficiencies, acceleration delays or other costs, that result from the change in the work. The Contractor will provide the information required of this provision in strict accordance with the change order provisions of this contract and acknowledges that the Owner and Architect have a right to rely on the Contractor's strict compliance, including compliance with time requirements such that the Owner and Architect have an opportunity to minimize the costs associated with the change request by timely submission of the information required under this paragraph. The intent and requirement of this paragraph is for the contractor to provide all facts, analysis and evidence of this claim as early as is practicable so that the Owner has the opportunity to minimize damages and fully evaluate the contractor's claim without incurring litigation costs. The Contractor shall not reserve rights to damages or present claims for damages or evidence of damages at any arbitration or trial that were not presented to support its Change Order request and Notice of Claim documentation. It is material to this contract that the Owner and Architect be given an opportunity to review the totality of the evidence the Contractor intends to present in connection with any change order request at the time the change order request is being considered.

.2 Payment of a change order shall constitute accord and satisfaction of all claims in connection with the change or changes to the Contract addressed by the change order, and it is understood and agreed that a signed change order form shall be the complete and fully integrated agreement for all related costs and that there are no oral or written understandings, representations or agreements, directly or indirectly, connected with the Change Order that are not affirmatively stated on the signed Change Order form. The contractor's execution of a change order constitutes a representation that it will make no further claims for damages. Contractor shall not be permitted to execute any Change Order with a reservation of rights to later seek damages for impacts, delays, or acceleration of it's work.

.3 Any change (Add and/or Deduct) to the Contract amount as a result of a Change Order shall be based upon the Detailed Cost Breakdown as submitted by the Contractor and reviewed by the Architect.

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.4 **For any Change Order work not itemized on the Detailed Cost Breakdown, the change to the Contract amount shall be an agreed upon amount by the Owner and the Contractor based upon a cost breakdown of labor and/or materials plus ten percent for overhead and profit. Any increase to Bond costs shall be included within the ten percent overhead amount.**

.5 **For Change Order work for Subcontractors, the Contractor shall be entitled to the cost of the Subcontractors work plus five percent for overhead and profit. Any increase to Bond costs shall be included within the five percent overhead amount.**

.6 **If additional time is required as part of a change, the cost impact where additional costs are permitted under a specific section of the contract documents shall be included in the Contractor's overhead and profit. There shall be no additional contract time if the change order states "0" days is added to the Contract.**

§ 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:

.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; **Unit prices stated on the Contract Proposal Form by the Contractor shall be added to or deducted from the Contract Sum only if directed to do so by the Owner or the Architect. Any work described as a unit price item for additional work shall not be considered as part of the Contract unless so indicated by Change Order during the performance of the work. The Owner reserves the right to perform, or otherwise have performed, the work described as unit price work in the Contract Documents. Unit prices shall include costs of all bonds, insurances, overhead, profit, supervision, and Contract time.**

.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. **Cost** for the purposes of this Section 7.3.4 shall be **determined by the Detailed Cost Breakdown as submitted by the Contractor and reviewed by the Architect, and/or Documentation of Costs as specified in 7.2.2.1.**

§ 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,

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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 cost, **including overhead and profit credit,** 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 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.

.1 There is intended herein to be a differentiation between "Substantial Completion" and "Final completion". Substantial Completion is as defined in Paragraph 9.8.1. Final Completion shall be when the Contract is fully performed, including all Punch List items.

§ 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.

§ 8.2.4 Cold or freezing weather shall not be considered an excuse for the stopping of work under this contract. The Contractor shall use all such methods of temporary construction as may be necessary and with the use of temporary heat, continue the work throughout the winter. The temporary construction shall be of

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such construction and materials as will properly enclose the work and maintain a temperature of not less than 50° F.

§ 8.2.5 If low temperatures make it impossible to continue operations safely by use of cold weather precautions, the Contractor shall cease work and notify the Architect and Owner by letter. When work is resumed the Contractor shall notify, by letter, the Architect and Owner. Such stoppage shall not constitute an extension of the completion date.

§ 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.

.1 **No Change Order extending the Contract Time shall result in any increased payments to the Contractor for extended overhead, delay damages, "impact" damages, loss of efficiency, loss of productivity or any other similar form of loss, damage or compensation.**

.2 **No payment or compensation or claim for damages shall be made to the Contractor as compensation for damages for any delays or hindrances from any cause whatsoever in the progress of the work, notwithstanding whether such delays be avoidable or unavoidable. The Contractor's sole remedy for delays shall be an EXTENSION OF TIME ONLY, pursuant to, and only in accordance with this Paragraph 8.3, such extension to be a period equivalent to the time lost, day for day, by reason of any and all of the aforesaid causes, as determined by the Architect. In consideration for this grant of time extension, the Owner and/or Architect shall not be held responsible for any loss or damage or increased costs sustained by the Contractor as a result of any delays caused by the Owner or Architect or any other Contractor or on account of the aforesaid causes or any other cause of delay. In the event the Contractor shall choose to litigate this clause or issue to seek compensation for delays, and the Contractor is not the substantially prevailing party in said litigation, the Contractor shall reimburse the Owner and the Architect for their reasonable attorney's and expert witness fees and all other costs and expenses incurred by them in the litigation. Substantially Prevailing shall mean that the Contractor recovers an award that is (1) greater than the highest amount of any settlement offer made to resolve the claim; or, (2) greater than 60% of the Contractor's claim for damages if the highest amount offered to settle the claim is 60% or less of the amount of the Contractor's Claim; that the Contractor has alleged it is entitled to in the litigation.**

.3 **No price adjustments will be made to the Contractor for increased material, fuel, etc., costs resulting from construction delays caused by the Contractor or any of the other Contractors performing work on the site.**

§ 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. **To the extent that Contractor may be entitled to damages for delay, interference, inefficiency or lost productivity, such damages shall be submitted in the Contractor's request for Change Order and Notice of Claim to be included in an appropriately executed Change Order. The legitimate right to such (including the truth of the facts asserted as the basis for the claim) and the accuracy of the amount of such costs or damages shall be verified by affidavit and submitted with appropriate backup information to support any such amount. Contractor acknowledges that it is not entitled to damages for delay, interference, acceleration or inefficiency in any amount other than the amount of any agreed Change Order. To the extent that a Change Order cannot be agreed to, Contractor shall submit a claim in accordance with the provisions of Article 15. For any such claim that is submitted or pursued, Contractor acknowledges that it is not entitled to any amount greater than the verified amount submitted in its request for a Change Order.**

§ 8.3.4 DAMAGE CLAIMS FOR DELAYS CAUSED BY CONTRACTORS, SUBCONTRACTORS AND SUPPLIERS OR AN EMPLOYEE OF ANY OF THEM:

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.1 **The Owner is not responsible for delays caused by any Contractor. The Owner is not responsible for problems caused by the failure of a Contractor to coordinate its work with other Contractors. The Owner is not liable for any damages suffered by a Contractor arising from any Contractor's delays and/or failure to coordinate its work. Contractor hereby waives and releases the Owner from any liability and damages caused by lack of coordination by a Contractor, or between or among the Contractors, including their subcontractors and suppliers.**

.2 **The Architect and the Owner and their representatives shall not be liable to a Contractor for any increased costs or damages for defective work, interference, or delays resulting from any conflict between or among the Contractors, their subcontractors and suppliers. Neither the Owner nor the Architect shall be a party to disputes or actions between or among the Contractors or their subcontractors and suppliers concerning such additional expense or damage.**

.3 **It is agreed by all parties that disputes or actions between Contractors concerning any additional expense or damage herein before mentioned shall not delay completion of the Work, which shall be continued by the parties pending final resolution of a claim including judicial proceedings.**

.4 **Each Contractor hereby waives privity of contract defenses and agrees that other contractors have the right to file claims in a binding arbitration with the American Arbitration Association pursuant to the Construction Industry Arbitration Rules then in effect against Contractor in the event Contractor is alleged to have caused damages to another Contractor by reason of delay or lack of coordination. Neither the Owner nor the Architect shall be a party to such Arbitration.**

.5 **It is agreed by the parties to this Contract (the Owner as promisee and the Contractor as promisor) that the intent of this Section 8.3.4 is to benefit the other and is the mutual intents of the Owner and the Contractor that this Section 8.3.4 raises the Contractor and such other Contractors to the status of third party beneficiaries only as to the terms and conditions of Section 8.3.4. The Contractor agrees that Section 8.3.4 is provided as a benefit to the Contractor and that the Contractor specifically excludes, releases, foregoes and waives any claims against the Owner or the Architect for extended overhead, delay damages, "impact" damages, loss of efficiency, loss of productivity acceleration, or any other similar form of loss, damage or compensation, or other damages related to any delays whatsoever or from any amendment to the Construction Schedule.**

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

Within the time period specified in Section 011000, the Contractor shall submit on the form required by the Architect (sample form included following these General Conditions), a Detailed Cost Breakdown of scheduled value of all items of work entering into the Contract. This detailed breakdown will show quantities of the respective items and the allowance for labor, material and other costs entering into each item. The detailed breakdown, when reviewed by the Architect, shall be used as a basis by the Contractor in preparing monthly estimates for payment and shall, as accurately as possible, reflect the true division of costs of the respective items entering into the Contract. Contractor shall submit Detailed Cost Breakdown by the date specified and prior to submitting any application for payment. No application for payment shall be processed until the Detailed Cost Breakdown is submitted and accepted.

§ 9.3 Applications for Payment

§ 9.3.1 On a specified day of each month, as determined at the Initial Job Conference, the Contractor shall submit to the Architect an itemized Application for Payment **on A.I.A. Document G702,** prepared in accordance with **and accompanied by** the schedule of values **A.I.A. Document G703** for completed portions of the Work. The application shall be notarized 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 provided for in **Paragraph 9.3.1.3 Number of required notarized copies to be submitted to be determined at the Initial Job conference.**

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a) **Contractors shall submit monthly progress construction schedule updates with rough draft (pencil copy) of request for payment application each month for approval by the Architect and Owner prior to submittal of specified hard copy of payment application in order for payment application to be approved. Failure by the Contractor to include updated scheduling information with the monthly payment application request will be cause by the Architect to not approve the payment request.**

b) **Any update to the construction schedule reflecting a revision to the original reviewed comprehensive schedule shall include a narrative as to the revision (cause, corrective action taken, etc.), a statement of coordination resolved among all Prime Contractors regarding the revision, and a verification that Project Completion dates remain intact.**

c) **Any updates/revisions to the construction schedule shall be approved and signed off by all Contractors and reviewed by the Architect and Owner prior to approval of any Contractor's monthly payment application.**

d) **Submittals of all Color Selectors/Samples, Shop Drawings, etc., shall be completed within the time period specified in Section 011000. Should any of these items remain outstanding beyond that time period, no further payments will be processed.**

§ 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.

.1 **Contractor shall submit with the Application for Payment each month, a Sworn Statement stating that the Contractor has paid all Subcontractors of whatever tier who have performed Work or provided equipment and materials for the Project in the full amount to which the Subcontractors are entitled to date and waives any right that the Contractor, his subcontractor, and/or his suppliers have to file a Mechanic's Lien for the work, material and/or supplies provided to date. (sample form included following these General Conditions)**

§ 9.3.1.3 Estimates for payment Documents will require breakdown of the total work completed to date of submission. From this total will be deducted a ten percent retainage. From the resultant amount will be deducted all previous payments. At such time that the Contractor determines that 50 percent of the work has been completed the Contractor shall notify the Owner, Architect and the Contractor's Surety in writing of this fact and upon the Owner's verification of such completion, retainage shall be reduced from 10% to 5% unless the Contractor is not making satisfactory progress, or unless there is specific cause for greater withholding. The retained five percent will be processed for payment on the issuance of the Certificate of Substantial Completion, unless amounts are withheld as otherwise provided in this agreement.

§ 9.3.1.4 Should the Architect, at any time during the progress of the work, consider the amount withheld on Monthly Estimates for Payment to be in excess of the amount necessary to complete the work, or necessary for the full and ample protection of the Owner, then the Contractor may reduce the percentage retained to an amount sufficient for the Owner's proper protection, as approved by the Architect. Should the Architect, at a later date, consider the amount withheld insufficient to protect the interest of the Owner, the Architect may increase the retained percentage to an amount not to exceed ten percent, or five percent, dependent upon the stage or percentage of contract completion.

§ 9.3.1.5 Pursuant to Section 8.3.4, a dispute based upon increased costs claimed by one Prime Contractor occasioned by delays or other actions of another Prime Contractor may not be brought against the Owner. Should a Prime Contractor still attempt to bring such a claim against the Owner, additional retainage in the sum of one and one-half times the amount of any possible liability may be withheld from the parties directly involved until such time as final resolution is agreed to by all parties directly or indirectly involved unless the Contractor attempting to initiate the claim against the Owner furnishes a bond satisfactory to the Owner to indemnify the Owner against the claim.

§ 9.3.1.6 The Architect/Engineer shall make final inspection within 30 days of receipt of the Contractor's written request for final inspection. If the work is substantially completed, the Architect/Engineer shall issue

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a Certificate of Substantial Completion. As per Section 9.10, regarding Contractor's initial Application for Final Payment, the Architect/Engineer shall issue a Certificate for Payment, less one and one-half times the amount required to complete any then remaining, uncompleted, punch list items, which amount shall be certified by the Architect/Engineer and upon receipt by the Owner of any guarantee bonds which may be required, in accord with the Contract Documents, to insure proper workmanship for a designated period of time, the Owner shall make payment within 45 days thereafter. The certificate given by the Architect/Engineer shall list each uncompleted item and a reasonable cost of completion. Final payment of any amount withheld for the completion of the minor items shall be paid upon completion of the items with submission of the Final Application for Payment in accordance with Section 9.10. Any amounts withheld under this Paragraph are in addition to any amounts withheld under Paragraph 9.3.1.5.

§ 9.3.1.7 The cost of preparation of shop drawings and related information shall not be included in submission for payment until substantial quantities of materials are on the project site.

§ 9.3.2 Materials in reasonable quantities, which are delivered to the site, properly stored, and accepted for incorporation in the work but not yet so used, may be included on Monthly Estimates for Payment. The Contractor shall submit with the Monthly Estimate reflecting the unincorporated material the following:

- **.1 The original and five copies of itemized, paid invoices showing payment of such material by the Contractor and delivery slips certifying to the delivery of the quantities set forth on the estimate to the site of the work.**
- **.2 Payment for materials stored on the site shall be based on actual cost for same as shown by the receipted invoices and shall not exceed the cost of materials as indicated on the reviewed Detailed Cost Breakdown for the particular items involved.**
- **.3 The receipted invoices shall have each item identified and marked with the Contractor's corresponding itemized breakdown number.**
- **.4 Provide Insurance Certificates in the full amount of the materials against theft, loss from any other cause, damage, destruction and/or such other risks as may be involved, which would render the aforesaid materials unfit or unavailable for incorporation in the work.**
- **.5 Statement from the Contractor's Surety Company acknowledging stored materials are being paid and there is no objection.**
- **.6 Request for payment for materials stored off site, in addition to the above requirements, shall include a statement identifying the location of said materials. The Owner and the Architect, or their representatives, shall have full access to the location of said materials.**
- **.7 The Contractor shall mark or identify such materials as being the property of the Owner and shall be solely responsible for their safe keeping and usability at the time it is to be incorporated in the work and shall at his own expense care for and protect the same.**
- **.8 The Contractor shall submit the "Contractor's Request for Stored Material Payment" form, included following these General Conditions, with each request for stored material payment. Failure to submit the form and verification attachments will result in denial of the request.**
- **.9 "Stored Materials" shall be defined as fabricated, primed, and ready for installation.**

§ 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

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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.

§ 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.

- **.1 The Owner shall have no responsibility or liability for interest on late payments pursuant to the Public Works Regulation Law.**

§ 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

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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.

§ 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, 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.

§ 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.

.1 The Owner's receipt of an Occupancy Permit does not constitute "Completion" of the work by the Contractor. To reach "Completion", the Project must have all work complete, there shall be no missing or incomplete items or temporary items on both the building/structure and site.

§ 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

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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 **Final Payment of the Entire Project** .

§ 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.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Contractor shall complete any portion or portions of the work in such order as may be stated in the Contract Documents. All work shall be so arranged and Contractors shall so coordinate their work as to complete the work by the date set forth in the Contract. See Section 011000. 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.

§ 9.9.4. The Contractor shall secure and pay all costs required for all necessary permits, licenses, approvals or certificates required for occupancy or completion of construction as issued or required by any agency having jurisdiction thereof.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 The Contractor, when the work is considered complete, shall submit to the Architect a written certification that:

- **.1 Contract Documents have been reviewed.**
- **.2 Work has been inspected and completed in accordance with the Contract Documents.**
- **.3 Equipment and systems have been tested and operated in the presence of the Owner's representative.**
- **.4 Work is completed and ready for final review.**
- **.5 Request that the Architect make a review to verify the status of completion with reasonable promptness after receipt of such request.**

§ 9.10.2 Should the Architect consider that the work is incomplete or defective:

- **.1 The Architect will notify the Contractor in writing listing the incomplete or defective work.**

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.2 The Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the Architect that the work is complete.
.3 The Architect will again review the work.

§ 9.10.3 Should the Architect perform more than one review to those listed above due to failure of the work to comply with the claims of status of completion made by the Contractor, and/or additional services more than 60 days beyond the specified completion date for the Project, due to failure of the work to comply with the Contract Documents:

.1 The Owner will compensate the Architect for such additional services.
.2 The Owner will deduct the amount of such compensation from the final payment to the Contractor.

§ 9.10.4 Following Substantial Completion, in the event the Contractor or its subcontractor fails to complete the list of items of the work instructed by the Architect to be corrected or completed within 30 days after the date of Substantial Completion, the Owner may (I) exercise any available remedies to correct or complete deficient work or retain a third party to correct or complete such work at the cost of the defaulting contractor, and (II) retain and deduct from any payments or retention otherwise due to the defaulting contractor any fees and expenses for services required to be provided by the Architect more than 30 days after the specified Completion Date.

§ 9.10.5 When the Architect finds that the work is acceptable under the Contract Documents, the Architect shall request the Contractor to make closeout Submittals:

.1 Evidence of compliance with requirements of governing authorities.
.2 Bound and indexed Operation and Maintenance Manuals, including all extended Warranties issued by Contractors and/or manufacturers.
.3 Record Drawings incorporating As-Built Revisions to drawings and/or specifications, including change orders.
.4 Contractor's Affidavit of Payment of Debts and Claims, A.I.A. Document G706.
.5 Contractor's Affidavit of Release of Liens, A.I.A. Document G706A.
.6 Consent of Surety Company to Final Payment, A.I.A. Document G707, with effectively dated powers of attorney attached.
.7 Application and Certification for Final Payment, A.I.A. Documents G702 and G703.

§ 9.10.6 Final payment shall be based upon full completion of the Project. The final payment shall not be due and payable until the Contractor's satisfactory completion of the requirements listed under final review above. Final payment to the Contractor shall not relieve any Surety of its obligation to the Owner as set forth in the Surety Bonds

§ 9.10.7 Where one or more claims against the Contractor, which are in controversy appear unsatisfied, the Architect shall have the discretion to direct final payment to be made, or a partial payment to be made from the monies due, should it be determined that the withholding of the entire final payment would work a hardship on the Contractor or delay the final payments required under this paragraph. The Contractor shall itemize the claims which remain unsatisfied, giving the reason therefore, and the statements of the Surety Companies shall provide that the final payment, or partial payment, as the case may be, shall not relieve any Surety of any obligations to the Owner as set forth in the Surety Bonds. If only partial payment is permitted under this paragraph, the final payment shall not be made until the Contractor shall have furnished satisfactory evidence and a statement from the Surety that all claims against the Contractor have been paid and that payment to the Contractor of the Contract balance shall not relieve the Surety of any of its obligations to the Owner as provided in the Surety's Bond.

§ 9.10.8 The acceptance by the Contractor of the final payment shall be and shall operate as a release to the Owner and every member and agent thereof from all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work. No payment, however, shall operate to release the Contractor or the Contractor's Sureties from any obligations under this Contract or the Performance and Payment Bond.

§ 9.10.9 Final Completion liquidated damages, as specified in Section 002000, shall begin to be assessed on the Final Project Completion Dates as specified in Section 011000. The definition of 'Final Project Closeout Completion' shall be the state when the Project should be completely closed out to receive Final Payment as specified above in Paragraph 9.10.6.

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ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.1.2 The Contractor shall comply with the Federal Occupational Safety & Health Act (OSHA) of 1970 and perform associated recording and reporting requirements.
§ 10.1.2.1 The presence of lead based paint may exist at the site. It is the contractor's responsibility to perform his work in accordance with OSHA Regulations CFR 1926.62.

§ 10.1.3 The Contractor shall not install any known product or materials, as currently defined by current State and Federal regulations, in the execution of the Contract which might have a harmful, hazardous or toxic affect upon tradespersons working on the Project, or upon any other occupants or future occupants of the building, regardless of materials approved for use or specified.

§ 10.1.4 Any hazardous materials brought to the workplace for use during the construction of the project shall be identified by Material Safety Data Sheets which shall be turned over to the Owner's Representative. **Full responsibility and liability for storage and use of such hazardous materials shall be with the Contractor bringing such materials onto the project site.**

§ 10.1.5 The Contractor shall submit certified letters to the Owner that there is no asbestos, lead or toxic substance in any materials installed on the project.

§ 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

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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.

§ 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

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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.

.1 **In an emergency situation, all NESHAP regulations published on November 20, 1990, will be followed. Violators of the NESHAP regulations will be subject to significant fines and enforcement action from EPA, as well as the applicable State or Local air agencies.**

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 **Section 007316 – Insurance Requirements**. 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.

§ 11.1.1.1 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work.

§ 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 **Section 007316 – Insurance Requirements**. 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.

§11.1.2.1 Certificates of bonds acceptable to the Owner shall be filed with the Owner prior to commencement of the Work.

§ 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.

§11.1.4.1 The Contractor's Insurance Company shall provide written notification to the Owner and Architect a minimum of 30 days prior to any cancellation of any required insurance.

§ 11.2 Owner's Insurance

§ 11.2.1 See paragraph 11.4.

§ 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

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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 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,

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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

§ 13.1.1 The Contract shall be governed by the law of the place where the Project is located.

§ 13.1.1.1 The following laws and/or acts shall be incorporated in the Contract:

a. PENNSYLVANIA PREVAILING WAGE RATES (Act No. 442 of 1961, P.L. 987, amended by Act 342 of 1963, P.L. 653): This regulation and the general prevailing minimum wage rates, as determined by the Secretary of the Pennsylvania Department of Labor and Industry, Bureau of Labor Law Compliance for Prevailing Minimum Wage Predeterminations (hereafter referred to as "the Secretary"), which shall be paid for each craft or classification of all workers needed to perform the Contract during the anticipated term thereof in the locality in which public work is performed, are made part of this Contract.

1) The general prevailing minimum wage rates including contributions for employee benefits as shall have been determined by the Secretary must be paid to the workmen employed in the performance of the Contract.

2) Workmen shall be paid no less than such general prevailing minimum wages and such other provisions to assure payment thereof as heretofore set forth.

3) These provisions shall apply to all work performed on the Contract by the Contractor and to all work performed on the Contract by all Subcontractors.

4) The Contractor shall insert in each of the Contractor's Subcontracts all of the provisions contained in these required provisions and such other stipulations as may be required.

5) No workmen may be employed on the Project except in accordance with the classifications set forth in the decisions of the Secretary. In the event that additional or different

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classifications are necessary the procedure set forth in Section 7 of the Regulations shall be followed.

6) **All workmen employed or working on the Project shall be paid unconditionally, regardless of whether any contractual relationship exists or the nature of any Contractor, Subcontractor and workmen, not less than once a week without deduction or rebate, on any account, either directly or indirectly, except authorized deductions, the full amount due at the time of payment, computed at the rate applicable to the time worked in the appropriate classification. Nothing in the Contract, the Act or the Regulations shall prohibit the payment of more than the general prevailing wage rates as determined by the Secretary to any workmen on the Project.**

7) **The Contractor and each Subcontractor shall post for the entire period of construction the wage determination of the Secretary, including the effective date of any changes thereof, in a prominent and easily accessible place or places at the site of the work and at such place or places used by them to pay workmen their wages. The posted notice of wage rates must contain the following information:**
   a) **Name of Project.**
   b) **Name of Owner.**
   c) **The crafts and classifications of workmen listed in the Secretary's general prevailing minimum wage rate determinations for the particular project.**
   d) **The general prevailing minimum wage rates determined for each craft and classification and the effective date of any change.**
   e) **A statement advising workmen that if they have been paid less than the prevailing minimum wage rate for their job classification or that the Contractor and/or Subcontractor are not complying with the Act or the Regulations in any manner whatsoever they may file a protest with the Secretary of Labor and Industry. Any workmen paid less than the rate specified in the Contract shall have a civil right of action for the difference between the wage paid and the wages stipulated in the Contract, which right of action must be exercised within six months from the occurrence of the event creating such right.**

8) **The Contractor and Subcontractors shall keep an accurate record showing the name, craft and/or classification, number of hours worked per day, and the actual hourly rate of wage paid (including employee benefits) to each workman employed by him in connection with the Project and such record must include any deductions from each workman. The record shall be preserved for two years from the date of payment and shall be open at all reasonable hours to the reviewed of the Owner and to the Secretary or his duly authorized representative. Weekly payroll certifications shall be submitted, to the Owner, on Form LLC-25, copy included following these General Conditions.**

9) **Apprentices shall be limited to the numbers as shall be in accordance with a bona fide apprenticeship program registered with and approved by the Pennsylvania Apprenticeship and Training Council and only apprentices whose training and employment are in full compliance with the provisions of the Apprenticeship and Training Act approved July 14,1961 (Act No. 304) and the Rules and Regulations issued pursuant thereto shall be employed on the Project. Any workman using the tools of a craft who does not qualify as an apprentice within the provision of this subsection shall be paid the rate predetermined for journeymen in that particular craft and/or classification.**

10) **Employers not parties to a contract requiring contributions for employee benefits which the Secretary has determined to be included in the general prevailing minimum wage rate shall pay the monetary equivalent thereof directly to the workmen.**

11) **Payment of compensation to workmen for work performed on the Project on a lump sum basis, or a piece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be deemed a violation of the Act and these Regulations, regardless of the average hourly earnings resulting therefrom.**

12) **Each Contractor and each Subcontractor shall file a statement each week and a final statement at the conclusion of the work on the Contract with the Owner, under oath, and in form satisfactory to the Secretary, certifying that all workmen have been paid wages in strict conformity with the provisions if any wages remain unpaid to set forth the amount of wages due and owing to each workman respectively.**

b. **COMPETENT WORKMEN: No workmen shall be regarded as competent first class, within the meaning of this Act, except those who are duly skilled in their respective branches of labor, and who shall be paid not less than such rates of wages and for such hours work as shall be**

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established and current rates of wages paid for such hours by employers of organized labor in doing similar work in the district where work is being done.

c. DISCRIMINATION PROHIBITED: According to 62 Pa. C.S.A. § 3701, the Contractor agrees that:

1) In the hiring of employees for the performance of work under the contract or any sub-contract, no contractor, sub-contractor, or any person acting on behalf of the contractor or sub-contractor shall by reason of gender, race, creed or color discriminate against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.

2) No contractor or sub-contractor or any person on their behalf shall in any manner discriminate against or intimidate any employee hired for the performance of work under the contract on account of gender, race, creed or color.

3) The contract may be canceled or terminated by the government agency, and all money due or to become due under the contract may be forfeited for a violation of the terms or conditions of that portion of the contract.

d. HUMAN RELATIONS ACT: The provisions of the Pennsylvania Human Relations Act, Act 222 of October 27, 1955 (P.L. 744) (43 P.S., Section 951, et seq.) of the Commonwealth of Pennsylvania prohibit discrimination because of race, color, religious creed, ancestry, age, sex, national origin, handicap or disability, by employers, employment agencies, labor organizations, contractors, and others. The Contractor shall agree to comply with the provisions of this Act as amended that is made part of this specification. Your attention is directed to the language of the Commonwealth's non-discrimination clause in 16 Pa. Code 49.101.

e. PROVISION FOR THE USE OF STEEL AND STEEL PRODUCTS MADE IN THE U.S.:

1) In accordance with Act 3 of the 1978 General Assembly of the Commonwealth of Pennsylvania, if any steel or steel products are to be used or supplied in the performance of the Contract, only those produced in the United States as defined therein shall be used or supplied in the performance of the Contract or any Subcontracts thereunder.

2) In accordance with Act 161 of 1982, cast iron products shall also be included and produced in the United States.

3) Act 144 of 1984 further defines "steel products" to include machinery and equipment. The act also provides clarifications and penalties.

f. POLLUTION CONTROL - PRESERVATION OF NATURAL RESOURCES:

1) In compliance with Act No. 247 of the 1972 Session of General Assembly of the Commonwealth of Pennsylvania, a list of Federal and/or State statutes, rules or regulations dealing with the prevention of environmental pollution and preservation of public natural resources that may affect the Specifications are found in Section 007353. The Contractor shall fully comply with the latest revisions of said Acts and shall ensure compliance by all of the Contractor's Subcontractors.

2) All demolition and construction waste materials and/or rubbish shall be disposed of off the project site. All demolition and construction waste materials and/or rubbish shall be disposed of in accordance with the latest Pennsylvania Solid Waste Laws at an approved facility.

3) Contractors shall maintain a plan for soil erosion control acceptable to the Pennsylvania Department of Environmental Protection on the Project Site at all times and shall be responsible for complying with all laws, regulations and guidelines of the Department.

g. As specified in Section 002000, all contractors and subcontractors shall verify their employees are authorized to work in the United States (requires verification of citizenship or lawful immigration status), utilizing the U.S. Department of Homeland Security's E-Verify internet program. Contractors' forms shall be submitted within the time period specified in Section 002000; all subcontractors' forms shall be submitted prior to performing work on site.

§ 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.

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§ 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 Except as specifically provided elsewhere in the Contract Documents, the Owner's, Architect's and Owner's Representative's 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

The Owner shall have no responsibility or liability for interest on late payments pursuant to the Public Works Regulation Law, as stated in Article 9, Paragraph 9.6.1.1.

§ 13.6 USE OF STANDARD A.I.A. DOCUMENTS

§ 13.6.1 In addition to standard A.I.A. Documents required for submission under other procedures noted herein and/or additional A.I.A . standard Documents to be utilized on this Project are as follows:

Standard Form of Agreement Between Owner and Contractor, Document A101

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Bid Bond, Document A310
Performance Bond and Labor and Material Payment Bond, Document A312 with Section 6 amended as recommended by the A.I.A.
Change Order, Document G701
Application and Certificate for Payment, Document G702 and G703
Certificate of Substantial Completion, Document G704
Maintenance Bond in accord with Document G704
Supplemental Attachment for Acord Certificate of Insurance 25-S, Document G715
Contractor's Affidavit of Payment of Debts and Claims, Document G706
Contractor's Affidavit of Release of Liens, Document G706A
Consent of Surety Company to Final Payment, Document G707
Consent of Surety to Reduction In or Partial Release of Retainage, Document G707A

§ 13.6.2 A.I.A. Documents may be obtained from the American Institute of Architects, Pittsburgh Chapter, 925 Liberty Avenue, Suite 700, Pittsburgh, Pennsylvania 15222, (412) 471-9548; aiapgh.org/aia-documents/. Unless otherwise specified all documents shall be the latest edition.

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.

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§ 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, 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. **Claims must be initiated by written notice.** 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

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damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Contractor shall commence all Claims and causes of action, whether in contract, tort, breach of warranty or otherwise, against the **Owner** arising out of or related to the Contract in accordance with the requirements of the final dispute resolution method selected in the Agreement and within the period specified by applicable law,. The Contractor waives all Claims and causes of action not commenced in accordance with this Section 15.1.2.

.1 There are no statute of limitations on claims by the Owner against the Contractor.

§ 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 written 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.

§ 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 written notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.3.3 Failure to timely initiate a claim, in writing, shall constitute waiver of such claim. A statement at a meeting, a change order request or correspondence that does not strictly comply with the notice of claim provisions shall not constitute sufficient or timely notice of a claim.

§ 15.1.3.4 The written notice shall contain the following information and shall be verified under penalty of perjury by a person with authority to act on behalf of the Contractor that the facts and information contained in or relied upon in the notice is true and correct.

- **.1 The date that the event giving rise to the claim commenced and the date upon which it was first recognized by the contractor.**
- **.2 The cause of the event giving rise to the claim.**
- **.3 The effect of the event giving rise to the claim on the construction progress including the identity of all elements of work that have been and will be impacted by the event and a specific explanation as to why and to what extent such work has been or will be impacted by the event giving rise to the claim.**
- **.4 If the event giving rise to the claim has impacted the schedule, a proposal for schedule recovery from the event that impacted the schedule that shall include a description of the means by which the Contractor intends to prevent further delay in the work.**

§ 15.1.3.5 If the Contractor is claiming additional costs for delay, interference or inefficiency and the Contractor's notice of claim for delay, interference or inefficiency is timely submitted to the Architect pursuant to section 15.1.3, the Contractor shall submit a weekly Status Report until recovery from the delay, interference or inefficiency has been achieved. The Status Report shall be in writing and accompanied by an Affidavit subject to the penalty of perjury. The Status Report shall:

- **.1 Explain the efforts taken to recover from the delay, interference or inefficiency.**
- **.2 Identify the cause of any continuation of the delay, interference or inefficiency or any hindrance to the Contractor's proposed recovery plan.**
- **.3 Include a breakdown of the costs resulting from the delay, interference or inefficiency for any and all costs for which it is making a claim, attaching cost reports, certified payroll and invoices that support the costs.**
- **.4 The final Status Report shall identify the date that recovery from the delay, interference or inefficiency was achieved.**

§ 15.1.3.6 As a part of the Contractor's initial notification and status updates thereafter, the Contractor shall include in the information submitted with its claim, and any supplemental information provided, a detailed description of the specific reason that caused the additional damages requested and shall also fully

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identify any other causes, including inefficiencies caused by, other contractors, its own forces, or those of its subcontractors. The Contractor shall provide scheduling information that shows the critical impact to the schedule at the time it first provides notice and the impact anticipated at that time for future work. As a part of its status update of information required to support its request, the Contractor will provide a regular update of the schedule analysis showing continued critical impact on a monthly basis, showing both the impact that occurred as of that update and the continued anticipated impact for future work from the date of update. The Contractor acknowledges that the impact of the inefficiency of each change order shall be identified at the time of a change order request, and that the Contractor shall make no claim for any inefficiency based on a cumulative impact of the change orders.

§ 15.1.3.7 Even though formulas or means of calculating damages other than the records described in this contract are expressly prohibited and are contrary to the terms of this Agreement, the Owner understands that courts may still permit the contractor to present damages for inefficiencies. Contractor agrees to the following with regard to any claim for inefficiency:

- **.1 Claims for inefficiencies must be made within the time requirements of this Article 15.1.3 herein or other applicable provision of this contract. To the extent the full amount of inefficiency cannot be determined, the Contractor must provide a proper notice of its first occurrence of inefficiency costs even if the full amount of the claim cannot be determined. The Contractor must provide monthly updates of the amounts of inefficiency it has incurred in the prior month, with full documentation and invoices for labor, supervision and other inefficiency costs.**
- **.2 To the extent the Contractor uses a "measured mile" approach, or any similar formula to calculate damages such as earned value or similar analysis, the Contractor will identify the unimpacted activity period at the time it first makes its claim. The Contractor acknowledges that the use of such methods for calculating inefficiency require the identification of a period unimpacted by inefficiency and that such unimpacted period must occur prior to the period of inefficiency for such a method to be valid.**
- **.3 The Contractor shall not pursue any change order or claim relying on the Eichley formula, Manshul formula or other similar formula in pursuing any overhead amounts, since these formulas do not calculate overhead amounts with any degree of reasonable certainty. The Contractor agrees that any amounts for overhead, including home office overhead, are included in the Contractor's mark-up for overhead and profit as described in this agreement.**

§ 15.1.3.8 Payment of a change order shall constitute accord and satisfaction of all claims in connection with the change or changes to the Contract addressed by the change order, and it is understood and agreed that a signed change order form shall be the complete and fully integrated agreement for all related costs and that there are no oral or written understandings, representations or agreements, directly or indirectly, connected with the Change Order that are not affirmatively stated on the signed Change Order form. The contractor's execution of a change order constitutes a representation that it will make no further claims for damages inconsistent with this paragraph.

§ 15.1.3.9 Strict compliance with the provisions of 15.1.3 and all of its subparts is a condition precedent to the presentation of any claim for delay, interference or inefficiency.

§ 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.

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§ 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. **Refer to Article 8, Paragraph 8.3.** 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. **Contractor must also provide documentation regarding the weather that the Contractor anticipated and the information upon which the Contractor based his anticipation of weather conditions.**

§ 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. **It is understood and agreed that Contractor's waiver of consequential damages against the Owner shall extend to the benefit of the Architect, its owners, directors and employees, and the Architect's consultants.**

.3 The Contractor represents that its agreement to pursue costs, damages or claims in strict accordance with Article 15 herein or any other provision of the Contract is material to the award of the contract to the Contractor and that the Owner and Architect are entitled to rely upon this representation. The Contractor further agrees that this paragraph shall survive termination or rescission of this agreement even in the event of a material breach of contract by the Owner.

§ 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 litigation of any Claim. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

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§ 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 if the parties dispute **the initial decision, it may be subject to litigation as hereafter specified.**

§ 15.2.6 Either party may file for litigation of an initial decision at any time, subject to the terms of Sections 15.1.2 and 15.2.6.1.

§ 15.2.6.1 The Owner may, within 30 days from the date of receipt of an initial decision, demand in writing that the Contractor file litigation. If such a demand is made and the Contractor fails to file for litigation within 30 days after receipt thereof, then the Contractor waives its rights to commence litigation notwithstanding Section 15.1.2 of these General Conditions with respect to the initial decision. Litigation shall be before the Court of Common Pleas of Mercer County, PA.

§ 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.

END OF SECTION

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DETAILED COST BREAKDOWN

40 Shenango Avenue, Sharon, PA 16146 Phone (724) 981-8820

130 7th Street, 201 Century Building, Pittsburgh, PA 15222 Phone (412) 281-2280

INSTRUCTIONS FOR USE

1. **Use as many first pages as required plus (1) second (signature) page.**

DETAILED COST BREAKDOWN

40 Shenango Avenue, Sharon, PA 16146
Voice (724) 981-8820

130 7th Street, Suite 201, Pittsburgh, PA 15222
Voice (412) 281-2280

Contractor's Name
Address 1
Address 2
City, State & Zip
Phone:
Fax:

HHSDR Architects / Engineers
Project Name:
HHSDR Project No.:
Contract.:
(General, Heating, Plumbing, Electric, Etc.)
Contractor's Job No.:

(A) Item No.	(B) Description	(C) Quantity	(D) Units	(E) Cost Per Unit = F + G	Division of Unit Cost		(H) Total Amount = C x E
					(F) Materials	(G) Labor, Etc.	
1	Description 1 (*Example*)	10	SF	$3.00	$1.00	$2.00	$30.00
2	Description 2 (*Example*)	15	EACH	$4.25	$3.13	$1.12	$63.75

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Contractor's Name
Address 1
Address 2
City, State & Zip
Phone:
Fax:

HHSDR Architects / Engineers
Project Name:
HHSDR Project No.:
Contract.:
(General, Heating, Plumbing, Electric, Etc.)
Contractor's Job No.:

(A) Item No.	(B) Description	(C) Quantity	(D) Units	(E) Cost Per Unit = F + G	Division of Unit Cost		(H) Total Amount = C x E
					(F) Materials	(G) Labor, Etc.	

TOTAL CONTRACT PRICE _____

I HEREBY CERTIFY THAT THE ABOVE IS AN ACCURATE BREAKDOWN OF CONSTRUCTION PRICES. I ALSO HEREBY ACKNOWLEDGE AND CONFIRM THAT THE ABOVE INFORMATION SHALL BE USED AS REFERENCED IN THE SPECIFICATIONS GENERAL CONDITIONS ARTICLE 7. THE CONTRACTOR IS RESPONSIBLE FOR ALL ACTUAL QUANTITIES REQUIRED FOR THE PROJECT.

Submitted
Contractor Date

Reviewed By
HHSDR ARCHITECTS / ENGINEERS Date

MATERIAL SOURCE OF SUPPLY AND SUB CONTRACTOR APPROVAL

40 Shenango Avenue, Sharon, PA 16146 Phone (724) 981-8820
130 7th Street, 201 Century Building, Pittsburgh, PA 15222 Phone (412) 281-2280

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Voice (724) 981-8820

130 7th Street, Suite 201, Pittsburgh, PA 15222
Voice (412) 281-2280

Contractor's Name
Address 1
Address 2
City, State & Zip
Phone:
Fax:

HHSDR Architects / Engineers

Project Name:
HHSDR Project No.:
Contract.:
(General, Heating, Plumbing, Electric, Etc.)
Contractor Job No.:

I propose to install the following items and/or I also propose to enter into a contract with the following Sub-Contractors, with the understanding that the Owner does not, in agreeing to such sub-contract, release me from any of the obligations of my contract with the Owner and that I assume all responsibility of such sub-contract.

Item No.	Spec. Number	Type of Material or Work	Check one		Name & Address of Mfg. or Sub-Contractor	For Architect's Use Only
			Mfg.	Sub-Contractor		

MATERIAL SOURCE OF SUPPLY AND SUB-CONTRACTOR APPROVAL

40 Shenango Avenue, Sharon, PA 16146
Voice (724) 981-8820 Fax (724) 981-4515

130 7th Street, Suite 201, Pittsburgh, PA 15222
Voice (412) 281-2280 Fax (412) 281-2334

Contractor's Name
Address 1
Address 2
City, State & Zip
Phone:
Fax:

HHSDR Architects / Engineers

Project Name:
HHSDR Project No.:
Contract.:
(General, Heating, Plumbing, Electric, Etc.)
Contractor Job No.:

I propose to install the following items and/or I also propose to enter into a contract with the following Sub-Contractors, with the understanding that the Owner does not, in agreeing to such sub-contract, release me from any of the obligations of my contract with the Owner and that I assume all responsibility of such sub-contract.

Item No.	Spec. Number	Type of Material or Work	Check one		Name & Address of Mfg. or Sub-Contractor	For Architect's Use Only
			Mfg.	Sub-Contractor		

Contractor's Signature

Date

Approved, HHSDR Architects & Engineers

Date

Condition #1 - Approved to meet contract requirements.
Condition #2 - The Source of Supply is acceptable subject to submission of samples and approval of same.
Condition #3 - Source of Supply is acceptable subject to submission and approval of shop drawings and/or catalog information.
Condition #4 - Item disapproved. Contractor shall resubmit request for these items in such a manner as to permit approval.
Condition #5 - Submit name of manufacturer.
Condition #6 - References shall be submitted by manufacturers or sub-contractors. If then found acceptable, the Contractor shall be notified by Architect in writing.

ASSIGNMENT OF RIGHTS
SALES/USE TAX REFUND

For value received, the undersigned, having authority to execute this assignment, does hereby assign and transfer to the **Name/Address of Owner**, all his, its or their rights to sales and use tax which may be refunded for the following project(s):

Contract Name/Project Name and Commission Number

The undersigned further agrees that he, it or they have not and will not file a claim for refund for any sales and/or use tax which is the subject of this assignment.

Dated: _____

_____
(Signature)

CORPORATE SEAL

_____
(Title)

_____
(Signature)

_____
(Title)

_____
(Business Name)

STATE OF)
) SS.
COUNTY OF)

On this, the ____ day of _____, 20___ before me _____,
(Notary Name)
the undersigned officer, personally appeared _____ known to me (or
(Company Official)
satisfactorily proven) to be the person(s) whose name(s) is/are subscribed to the within instrument,

and acknowledged that he/she executed the same for the purpose herein contained,

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

(Notary Signature)
My Commission Expires:

CONTRACTOR'S REQUEST FOR STORED MATERIAL PAYMENT

TO BE SUBMITTED ONLY AFTER PRIOR APPROVAL OF THE ARCHITECT

40 Shenango Avenue, Sharon, PA 16146
Voice (724) 981-8820

130 7th Street, Suite 201, Pittsburgh, PA 15222
Voice (412) 281-2280

Contractor's Name
Address 1
Address 2
City, State & Zip
Phone:
Fax:

HHSDR Architects / Engineers

Project Name:
HHSDR Project No.:
Contract for:
(General, Heating, Plumbing, Electric, Etc.)
Contractor Job No.:
Application No.:
Period to:

Item No.	Description	Quantity	Cost Per Unit	Value	Stored Location

Total: _____

Verification Attachments

_____ Paid Invoice for Requested Item(s).

_____ Insurance Certificates for Requested Item(s).

_____ Consent of Surety for Payment to Contractor for Requested Item(s).

I HEREBY CERTIFY THAT THE ABOVE IS AN ACCURATE LISTING OF MATERIAL COSTS AND STORAGE LOCATONS.

Submitted

Contractor _____ Date

SUBCONTRACTOR/SUPPLIER PAYMENT CERTIFICATION
AND
WAIVER OF LIENS

Project Name _____
Project Address _____

HHSDR # _____

Contract Name and Number _____

Contractor Name _____
Contractor Address _____

Contractor Phone Number _____

The undersigned, having authority to execute this certification, does hereby attest that all subcontractors who have performed work and all suppliers who have provided equipment and/or materials for the above referenced Contract of the Project, have been paid the full amount to which they are entitled to date.

Furthermore, the undersigned waives and releases any right that Contractor, and any subcontractor, supplier, materialman, or laborer have or may have to file a Mechanic's Lien or any other lien for the work, material, labor, and/or supplies provided to date.

Date: _____

_____
(Signature)

CORPORATE SEAL (if Corporation)

_____
(Title)

_____
(Signature, if Partnership)

_____
(Title)

STATE OF)
) SS.
COUNTY OF)

On this, the ____ day of _____, 20___ before me _____,
(Notary Name)
the undersigned officer, personally appeared _____ known to me (or
(Company Official)
satisfactorily proven) to be the person(s) whose name(s) is/are subscribed to the within instrument, and acknowledged that he/she executed the same for the purpose herein contained,
IN WITNESS WHEREOF, I hereunto set my hand and official seal.

_____
(Notary Signature)
My Commission Expires:_____

WEEKLY PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS

☐ Contractor or ☐ Subcontractor (Please check one) **ALL INFORMATION MUST BE COMPLETED**

CONTRACTOR ADDRESS	SUBCONTRACTOR ADDRESS	
PAYROLL NUMBER / WEEK ENDING DATE	PROJECT AND LOCATION PROJECT SERIAL # PROJECT #	

DEPARTMENT OF LABOR & INDUSTRY
COMMONWEALTH OF PENNSYLVANIA
BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGE DIVISION
7TH & FORSTER STREETS
HARRISBURG, PA 17120
1-800-932-0665

EMPLOYEE NAME	APPR. RATE (%)	WORK CLASSIFICATION	DAY AND DATE / HOURS WORKED EACH DAY	S-TIME 0-TIME	BASE HOURLY RATE	TOTAL FRINGE BENEFITS (C=Cash) (FB=Contributions)*	TOTAL DEDUCTIONS	GROSS PAY FOR PREVAILING RATE JOB(S)	CHECK #
						C: FB:			
						C: FB:			
						C: FB:			
						C: FB:			
						C: FB:			

*SEE REVERSE SIDE

PAGE NUMBER _____ OF _____

THE NOTARIZATION MUST BE COMPLETED ON FIRST AND LAST SUBMISSIONS ONLY. ALL OTHER INFORMATION MUST BE COMPLETED WEEKLY.

*FRINGE BENEFITS EXPLANATION (FB): Bona fide benefits contribution, except those required by Federal or State Law (unemployment tax, workers' compensation, income taxes, etc.)

Please specify the type of benefits provided and contributions per hour:

1) Medical or hospital care _____
2) Pension or retirement _____
3) Life insurance _____
4) Disability _____
5) Vacation, holiday _____
6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

1. The undersigned, having executed a contract with _____
(AWARDING AGENCY, CONTRACTOR OR SUBCONTRACTOR)

_____ for the construction of the above-identified project, acknowledges that:

(a) The prevailing wage requirements and the predetermined rates are included in the aforesaid contract.

(b) Correction of any infractions of the aforesaid conditions is the contractor's or subcontractor's responsibility.

(c) It is the contractor's responsibility to include the Prevailing Wage requirements and the predetermined rates in any subcontract or lower tier subcontract for this project.

2. The undersigned certifies that:
   (a) Neither he nor his firm, nor any firm, corporation or partnership in which he or his firm has an interest is debarred by the Secretary of Labor and Industry pursuant to Section 11(e) of the PA Prevailing Wage Act, Act of August 15, 1961, P.L. 987 as amended, 43 P.S.§ 165-11(e).

   (b) No part of this contract has been or will be subcontracted to any subcontractor if such subcontractor or any firm, corporation or partnership in which such subcontractor has an interest is debarred pursuant to the aforementioned statute.

3. The undersigned certifies that:
   (a) the legal name and the business address of the contractor or subcontractor are: _____
   _____

   (b) The undersigned is: ☐ a single proprietorship ☐ a corporation organized in the state of _____
   ☐ a partnership ☐ other organization (describe) _____

   (c) The name, title and address of the owner, partners or officers of the contractor/subcontractor are:

NAME	TITLE	ADDRESS

The willful falsification of any of the above statements may subject the contractor to civil or criminal prosecution, provided in the PA Prevailing Wage Act of August 15, 1961, P.L. 987, as amended, August 9, 1963, 43 P.S. § 165.1 through 165.17.

_____
(DATE)

_____
(SIGNATURE)

_____
(TITLE)

_____
SEAL

Taken, sworn and subscribed before me this _____ Day

of _____ A.D., _____

REQUEST FOR INFORMATION

RFI # _____ **Please type or print legibly**

TO: _____ **DATE:** _____

PROJECT: _____

LOCATION: _____

COMM. No. _____

FROM: _____ **SUBJECT:** _____

SPEC. REF. _____

DWG. REF. _____

QUESTION:

List all drawings, sections, details, and/or technical specifications associated with above question to illustrate that question can not be discerned from the Contract Documents: _____

Cite all trades/Contractors involved with work in question to illustrate that coordination of work has been conducted and work remains in question: _____

COPIES TO: _____ _____

REPLY

TO: _____ **ATTN:** _____

FROM: _____ **DATE:** _____

RESPONSE:

1. ☐ **YOU ARE AUTHORIZED TO PROCEED WITH THE WORK IDENTIFIED IN THE REPLY TO THIS RFI PROVIDED NO CHANGE IN THE CONTRACT AMOUNT OR COMPLETION DATES IS REQUIRED. IF THE REPLY WILL CAUSE AN IMPACT TO THE CONTRACT AMOUNT OR COMPLETION DATE, NOTIFY THE ARCHITECT PRIOR TO PROCEEDING.**
2. ☐ **DO NOT PROCEED WITH THIS WORK UNTIL YOUR COST PROPOSAL FOR THIS CHANGE HAS BEEN RECEIVED AND APPROVED.**

REPLY COPIES TO:

_____ _____

SECTION 007316 – INSURANCE REQUIREMENTS

The following constitute the Insurance Requirements formerly included in AIA Document A101-2017 Exhibit A, "Insurance and Bonds". The awarded Contractor's Contract – AIA Document A101-2017 "Standard Form of Agreement Between Owner and Contractor" shall provide for the following:

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth herein. The term General Conditions refers to AIA Document A201™–2017 (Section 007216 of the Specifications), General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Refer to Section A.3.3.2.1 for Contractor's responsibility to purchase and maintain property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and/or an Installation Floater Coverage sufficient to cover the total value of the entire Project on a replacement cost basis.

§ A.2.3.1.3 Upon Final Completion, the Owner shall maintain property insurance written for the total value of the Project.

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner and The Commonwealth of Pennsylvania as additional insureds on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

a. Contractor's insurances shall be maintained until final payment has been made as provided in Section 9.10 of AIA Document A201-2017 (Section 007216 of the Specifications).
b. Waivers of Subrogation: Refer to Section 11.3 of AIA Document A201-2017 (Section 007216 of the Specifications).

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self- insured retentions applicable to any insurance required to be provided by the Contractor. The Contractor shall be responsible for any and all deductible amounts.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Commonwealth of Pennsylvania, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04. (Form versions 12 19 also acceptable).

§ A.3.2 Contractor's Required Insurance Coverage
§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ A.3.2.2 Commercial General Liability
§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than:

- **a.** **For Contracts up to $1,000,000:** policy limits shall be not less than $500,000 ($500,000 each occurrence), $1,000,000 ($1,000,000 general aggregate), and $1,000,000 ($1,000,000 aggregate for products-completed operations hazard.
- **b.** **For Contracts over $1,000,000 and up to $2,000,000:** policy limits shall be not less than $1,000,000 ($1,000,000 each occurrence), $2,000,000 ($2,000,000 general aggregate), and $2,000,000 ($2,000,000 aggregate for products-completed operations hazard.
- **c.** **For Contracts over $2,000,000 and up to $5,000,000:** policy limits shall be not less than $5,000,000 ($5,000,000 each occurrence), $7,000,000 ($7,000,000 general aggregate), and $7,000,000 ($7,000,000 aggregate for products-completed operations hazard.
- d. The limits can be met by combination of General Liability and Umbrella Liability policies.
- e. The policy shall provide coverage for claims including
  - **.1** damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
  - **.2** personal injury and advertising injury;
  - **.3** damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
  - **.4** bodily injury or property damage arising out of completed operations; and
  - **.5** the Contractor's indemnity obligations under Section 3.18 of the General Conditions (Section 007216 of the Specifications).

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- **.1** Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- **.2** Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- **.3** Claims for bodily injury other than to employees of the insured.

.4 Claims for indemnity under Section 3.18 of the General Conditions (Section 007216 of the Specifications) arising out of injury to employees of the insured.
.5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
.6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
.7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
.8 Claims related to roofing, if the Work involves roofing.
.9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
.10 Claims related to earth subsidence or movement, where the Work involves such hazards.
.11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than $1,000,000 per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than $1,000,000 each accident, $1,000,000 each employee, and $1,000,000 policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than $1,000,000 per claim and $1,000,000 in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than $1,000,000 per claim and$1,000,000 in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than $1,000,000 per claim and $1,000,000 in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than $1,000,000 per claim and $1,000,000 in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than$1,000,000 per claim and $1,000,000 in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until final payment has been made as provided in Section 9.10 of AIA Document A201-2017 (Section 007216 of the Specifications). Insurances shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

§ A.3.3.2.1 Property Insurance:

a. **The General Contractor** shall provide Property Insurance written on a Builder's Risk "All-Risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others under the contract, comprising total value of the contract for the Project at the site on a replacement cost basis without optional deductibles. Property insurance shall include, without limitation, insurance against the perils of fire (with extended coverage), explosion, and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, to building systems from testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. The Owner shall be an additional insured.
b. **All other Prime Contractor(s)** shall provide an Installation Floater covering the replacement value of property installed, fabricated or erected. Coverage shall remain in force until the installation work is accepted by the Owner or when the insured's interest in the property installed ceases. The Owner shall be an additional insured on the installation floater. Installation floater shall be in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications.
c. The Builder's Risk Property Insurance and all Installation Floater Coverages shall provide for: Material purchased by the Contractor and paid for by the Owner and stored but not installed on the job, or stored off the site shall be insured by the Contractor to include the Owner's interest with a Certificate furnished, prior to the payment of the materials.
d. Certificates of Insurances shall be issued in duplicate.

§ A.3.3.2.2 Insurance for physical damage to property while it is in storage (on and off the site) and in transit to the construction site on an "all-risks" completed value form.

§ A.3.3.2.3 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

§ A.3.3.2.4 Umbrella Liability Insurance (to sit as excess of General Liability, Auto Liability, and Employer's Liability), with policy limits of not less than $2,000,000 per claim and $2,000,000 in the aggregate.

§ A.3.3.2.5 Railroad Protective Liability Insurance, with policy limits of not less than $2,000,000 per claim and $6,000,000 in the aggregate, for Work within fifty (50) feet of railroad property.

§ A.3.4 Performance Bond and Payment Bond

§ A.3.4.1 The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located and as approved by the Commonwealth's Department of Insurance to do business in Pennsylvania, as follows:

Type	Penal Sum ($0.00)
Payment Bond (Labor & Material)	100% of Contract Amount
Performance Bond	100% of Contract Amount

§ A.3.4.2 Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

§ A.3.4.3 Certificates of Bonds shall be issued in duplicate, prior to commencement of the work.

§ A.3.4.4 100% Performance & Payment Bonds.

§ A.3.5 MAINTENANCE BOND

§ A.3.5.1 The Contractor shall provide a Maintenance Bond providing additional coverage in the full amount of the Contract (100% of the Contract Amount) assuring against defective or inferior materials or workmanship which may develop during the period of one year from the date of final payment.

§ A.3.5.2 Final completion date(s) shall be established for the Project when completed. The date of final payment shall establish Bond and Warranty periods for all work completed in each designated portion, notwithstanding the phased construction and the resulting beneficial usage by the Owner prior to the final acceptance.

§ A.3.5.3 Certificates of Bonds shall be issued in duplicate, prior to commencement of the work.

END OF SECTION 007316

SECTION 007343 - PREVAILING MINIMUM WAGE DETERMINATION RATES

MERCER COUNTY AGRICULTURAL AND
CONSERVATION COMMUNITY
LEARNING CENTER AT
MUNNELL RUN FARM
41 MUNNELL RUN LANE
MERCER, PA 16137

FOR THE
MERCER COUNTY COMMISSIONERS
125 SOUTH DIAMOND STREET
MERCER, PA 16137
HHSDR #4826

The wage rates, included herewith, are as issued by the PA Department of Labor and Industry, Bureau of Labor Law Compliance for Prevailing Minimum Wage Predeterminations. Any questions pertaining to wage rates should be addressed to the Bureau, reference the Project Name, Serial Number and County as stated on the following wage rates. The Bureau may be reached on-line at www.dli.pa.gov or toll free phone at 1-800-932-0665.

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project Name:	Mercer County Agricultural and Conservation Community Learning Center at Munnell Run Farm
General Description:	Complete interior and exterior renovations to 2 existing buildings. Site excavation and concrete sidewalks, utility trenching. 4 Prime Contracts - GC, HC, PC, & EC
Project Locality	Mercer
Awarding Agency:	Mercer County Board of Commissioners
Contract Award Date:	7/9/2026
Serial Number:	26-05268
Project Classification:	Building/Heavy/Highway
Determination Date:	5/29/2026
Assigned Field Office:	Pittsburgh
Field Office Phone Number:	(412)565-5300
Toll Free Phone Number:	(877)504-8354
Project County:	Mercer County

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-05268 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	8/1/2024		$41.36	$29.51	$70.87
Asbestos & Insulation Workers	8/1/2025		$43.06	$30.31	$73.37
Boilermakers	6/1/2016		$40.90	$27.61	$68.51
Bricklayer	6/1/2025		$39.25	$25.62	$64.87
Bricklayer	12/1/2025		$39.75	$26.12	$65.87
Bricklayer	6/1/2026		$40.40	$26.47	$66.87
Carpenter	6/1/2024		$37.20	$19.92	$57.12
Carpenters - Piledriver/Welder	1/1/2025		$43.38	$22.72	$66.10
Carpenters - Piledriver/Welder	1/1/2026		$44.63	$23.47	$68.10
Carpenters	6/1/2025		$38.33	$20.52	$58.85
Cement Masons	7/1/2024		$34.57	$25.09	$59.66
Cement Masons	6/1/2025		$35.52	$25.64	$61.16
Drywall Finisher	1/1/2025		$34.01	$24.63	$58.64
Drywall Finisher	6/1/2025		$35.16	$25.98	$61.14
Electricians	12/29/2025		$51.45	$30.17	$81.62
Electricians	12/28/2026		$53.95	$30.94	$84.89
Electricians	12/27/2027		$56.55	$31.75	$88.30
Elevator Constructor	1/1/2025		$61.07	$40.05	$101.12
Elevator Constructor	1/1/2026		$63.71	$40.89	$104.60
Glazier	6/1/2013		$25.56	$13.98	$39.54
Iron Workers	6/1/2024		$34.83	$27.87	$62.70
Iron Workers	6/1/2025		$36.26	$28.64	$64.90
Iron Workers	6/1/2026		$37.76	$29.35	$67.11
Laborers (Class 01 - See notes)	1/1/2025		$27.32	$19.96	$47.28
Laborers (Class 01 - See notes)	1/1/2026		$27.82	$20.46	$48.28
Laborers (Class 02 - See notes)	1/1/2025		$27.47	$19.96	$47.43
Laborers (Class 02 - See notes)	1/1/2026		$27.97	$20.46	$48.43
Laborers (Class 03 - See notes)	1/1/2025		$30.47	$19.96	$50.43
Laborers (Class 03 - See notes)	1/1/2026		$30.97	$20.46	$51.43
Laborers (Class 04 - See notes)	1/1/2021		$23.57	$19.32	$42.89
Landscape Laborer (Skilled)	1/1/2025		$25.79	$18.78	$44.57
Landscape Laborer (Skilled)	1/1/2026		$26.79	$19.03	$45.82
Landscape Laborer (Tractor Operator)	1/1/2025		$26.09	$18.78	$44.87
Landscape Laborer (Tractor Operator)	1/1/2026		$27.09	$19.03	$46.12
Landscape Laborer	1/1/2025		$25.37	$18.78	$44.15
Landscape Laborer	1/1/2026		$26.37	$19.03	$45.40
Millwright	6/1/2020		$41.68	$20.32	$62.00
Operators (Class 01 - see notes)	6/1/2025		$42.72	$24.79	$67.51
Operators (Class 01 - see notes)	6/1/2026		$43.74	$25.29	$69.03
Operators (Class 02 -see notes)	6/1/2025		$36.67	$24.79	$61.46
Operators (Class 02 -see notes)	6/1/2026		$37.67	$25.29	$62.96
Operators (Class 03 - See notes)	6/1/2025		$33.88	$24.79	$58.67
Operators (Class 03 - See notes)	6/1/2026		$34.88	$25.29	$60.17
Painters Class 6 (see notes)	6/1/2024		$32.14	$24.93	$57.07

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-05268 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Painters Class 6 (see notes)	6/1/2025		$34.16	$25.81	$59.97
Pile Driver Divers (Building, Heavy, Highway)	1/1/2025		$62.82	$22.72	$85.54
Pile Driver Divers (Building, Heavy, Highway)	1/1/2026		$64.70	$23.47	$88.17
Piledrivers	1/1/2025		$41.88	$22.72	$64.60
Piledrivers	1/1/2026		$43.13	$23.47	$66.60
Plasterers	6/1/2024		$33.14	$21.04	$54.18
plumber	6/1/2025		$53.28	$25.87	$79.15
plumber	6/1/2026		$56.38	$25.87	$82.25
plumber	6/1/2027		$59.48	$25.87	$85.35
Pointers, Caulkers, Cleaners	6/1/2025		$40.66	$21.99	$62.65
Pointers, Caulkers, Cleaners	12/1/2025		$41.50	$22.50	$64.00
Pointers, Caulkers, Cleaners	6/1/2026		$42.20	$22.80	$65.00
Roofers	4/1/2024		$29.81	$19.04	$48.85
Roofers	4/1/2025		$30.31	$19.04	$49.35
Sheet Metal Workers	6/1/2024		$36.89	$29.32	$66.21
Sheet Metal Workers	6/1/2025		$38.36	$30.10	$68.46
Sign Makers and Hangars	7/15/2024		$32.32	$25.82	$58.14
Sign Makers and Hangars	7/15/2025		$33.48	$26.41	$59.89
Sprinklerfitters	4/1/2025		$49.75	$29.21	$78.96
Sprinklerfitters	4/1/2026		$52.82	$30.56	$83.38
Steamfitters	6/1/2024		$48.15	$29.57	$77.72
Steamfitters	6/1/2025		$50.20	$31.02	$81.22
Stone Masons	12/1/2022		$38.56	$23.61	$62.17
Terrazzo Finisher	12/1/2025		$42.75	$19.51	$62.26
Terrazzo Finisher	6/1/2026		$43.82	$19.94	$63.76
Terrazzo Mechanics	12/1/2025		$42.15	$21.76	$63.91
Terrazzo Mechanics	6/1/2026		$43.22	$22.19	$65.41
Tile Finisher	12/1/2025		$33.99	$18.71	$52.70
Tile Finisher	6/1/2026		$34.82	$18.98	$53.80
Tile Setter	12/1/2025		$40.80	$23.25	$64.05
Tile Setter	6/1/2026		$41.66	$23.49	$65.15
Truckdriver class 1(see notes)	1/1/2025		$36.43	$23.21	$59.64
Truckdriver class 1(see notes)	1/1/2026		$37.93	$23.71	$61.64
Truckdriver class 2 (see notes)	1/1/2025		$36.89	$23.52	$60.41
Truckdriver class 2 (see notes)	1/1/2026		$38.39	$24.02	$62.41
Window Film / Tint Installer	6/1/2019		$24.52	$12.08	$36.60

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-05268 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter	1/1/2025		$41.35	$22.09	$63.44
Carpenter	1/1/2026		$42.60	$22.84	$65.44
Carpenter Welder	1/1/2025		$42.85	$22.09	$64.94
Carpenter Welder	1/1/2026		$44.10	$22.84	$66.94
Carpenters - Piledriver/Welder	1/1/2025		$43.38	$22.72	$66.10
Carpenters - Piledriver/Welder	1/1/2026		$44.63	$23.47	$68.10
Cement Finishers	1/1/2024		$35.14	$26.30	$61.44
Cement Finishers	1/1/2025		$35.94	$27.50	$63.44
Cement Masons	1/1/2020		$32.84	$21.10	$53.94
Electric Lineman	9/2/2024		$66.56	$30.17	$96.73
Electric Lineman	9/1/2025		$68.06	$32.29	$100.35
Iron Workers	6/1/2024		$34.83	$27.87	$62.70
Iron Workers	6/1/2025		$36.26	$28.64	$64.90
Laborers (Class 01 - See notes)	1/1/2025		$33.70	$26.00	$59.70
Laborers (Class 01 - See notes)	1/1/2026		$34.70	$27.00	$61.70
Laborers (Class 02 - See notes)	1/1/2025		$33.86	$26.00	$59.86
Laborers (Class 02 - See notes)	1/1/2026		$34.86	$27.00	$61.86
Laborers (Class 03 - See notes)	1/1/2025		$34.25	$26.00	$60.25
Laborers (Class 03 - See notes)	1/1/2026		$35.25	$27.00	$62.25
Laborers (Class 04 - See notes)	1/1/2025		$34.70	$26.00	$60.70
Laborers (Class 04 - See notes)	1/1/2026		$35.70	$27.00	$62.70
Laborers (Class 05 - See notes)	1/1/2025		$35.11	$26.00	$61.11
Laborers (Class 05 - See notes)	1/1/2026		$36.11	$27.00	$63.11
Laborers (Class 06 - See notes)	1/1/2025		$31.95	$26.00	$57.95
Laborers (Class 06 - See notes)	1/1/2026		$32.95	$27.00	$59.95
Laborers (Class 07 - See notes)	1/1/2025		$34.70	$26.00	$60.70
Laborers (Class 07 - See notes)	1/1/2026		$35.70	$27.00	$62.70
Laborers (Class 08 - See notes)	1/1/2025		$36.20	$26.00	$62.20
Laborers (Class 08 - See notes)	1/1/2026		$37.20	$27.00	$64.20
Millwright	6/1/2024		$47.59	$23.72	$71.31
Millwright	6/1/2025		$49.72	$23.72	$73.44
Operators (Class 01 - see notes)	1/1/2025		$40.39	$24.23	$64.62
Operators (Class 01 - see notes)	1/1/2026		$41.96	$24.66	$66.62
Operators (Class 02 -see notes)	1/1/2025		$40.13	$24.23	$64.36
Operators (Class 02 -see notes)	1/1/2026		$41.70	$24.66	$66.36
Operators (Class 03 - See notes)	1/1/2025		$36.48	$24.23	$60.71
Operators (Class 03 - See notes)	1/1/2026		$38.05	$24.66	$62.71
Operators (Class 04 - See notes)	1/1/2025		$36.02	$24.23	$60.25
Operators (Class 04 - See notes)	1/1/2026		$37.59	$24.66	$62.25
Operators (Class 05 - See notes)	1/1/2025		$35.77	$24.23	$60.00
Operators (Class 05 - See notes)	1/1/2026		$37.34	$24.66	$62.00
Operators Class 1-A	1/1/2025		$43.39	$24.23	$67.62
Operators Class 1-A	1/1/2026		$44.96	$24.66	$69.62
Operators Class 1-B	1/1/2025		$42.39	$24.23	$66.62

BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES

Project: 26-05268 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators Class 1-B	1/1/2026		$43.96	$24.66	$68.62
Painters Class 2 (see notes)	6/1/2025		$40.36	$25.81	$66.17
Painters Class 3 (see notes)	6/1/2025		$43.68	$25.81	$69.49
Painters Class 4 (see notes)	6/1/2019		$28.20	$20.06	$48.26
Painters Class 5 (see notes)	6/1/2019		$22.91	$20.06	$42.97
Pile Driver Divers (Building, Heavy, Highway)	1/1/2025		$62.82	$22.72	$85.54
Pile Driver Divers (Building, Heavy, Highway)	1/1/2026		$64.70	$23.47	$88.17
Piledrivers	1/1/2025		$41.88	$22.72	$64.60
Piledrivers	1/1/2026		$43.13	$23.47	$66.60
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2022		$48.43	$40.28	$88.71
Truckdriver class 1(see notes)	1/1/2025		$36.43	$23.21	$59.64
Truckdriver class 1(see notes)	1/1/2026		$37.93	$23.71	$61.64
Truckdriver class 2 (see notes)	1/1/2025		$36.89	$23.52	$60.41
Truckdriver class 2 (see notes)	1/1/2026		$38.39	$24.02	$62.41

SECTION 007353 - ANTI-POLLUTION

PART 1 GENERAL

1.01 NOTICE TO BIDDERS

A. Section 3301 of the CPC (62 Pa. C.S. 3301) requires that bidders on construction projects for the Commonwealth of Pennsylvania be advised of the Federal and Commonwealth statutes, rules and regulations dealing with the prevention of environmental pollution and the preservation of public natural resources that apply to the project on which bids are being received.

1.02 HISTORY

A. Title 62 “Procurement” of the Commonwealth Procurement Code Chapter 33 “Prevention of Environmental Pollution” was added May 15, 1998, P.L.358, Act No.57, repealing the previous Act No. 247, House Bill number 1969, enacted into law October 26, 1972, and effective as of November 25, 1972.

1.03 SCOPE / REQUIREMENTS

A. The Bidder shall thoroughly acquaint himself with the terms of the statutes, rules, and regulations enumerated in this Section, and shall include in his bid price all costs of complying with the terms of the listed statutes, rules, and regulations. No separate or additional payment will be made for such compliance. In the event that the listed statutes, rules, and regulations are amended, or if new statutes, rules, and regulations become effective, which cause the contractor to perform additional work, the Owner may issue a change order or deviation request setting forth the additional work that must be undertaken. This change order or deviation request shall not invalidate the Contract.

B. It is the responsibility of the Contractor to determine what local ordinances, if any, will affect his work. He shall check for any county, city, borough, or township rules or regulations applicable to the area in which the Project is being constructed, and, in addition, for any rules or regulations of other organizations having jurisdiction, such as chambers-of-commerce, planning commissions, industries, or utility companies who have jurisdiction over lands which the Contractor occupies. Any costs of compliance with local controls shall be included in the prices bid, even though documents of such local controlling agencies are not listed herein.

C. The Contractor will be required to comply with the acts and regulations enumerated on the following list (Paragraph 1.04). This list is comprised of two parts: Part I listing Pennsylvania statutes and Part II listing Federal statutes. The list is illustrative only and in no way limits the Contractor’s responsibility to comply with all federal, state, and local laws, rules, and regulations, as set forth hereof.

D. Each separate contractor shall comply with the regulations and standards of Title 25 “Environmental Protection” of the Pennsylvania Code, Pennsylvania State Agencies (including, but not limited to, Bureau of Air Quality, Office of Pollution Prevention and Energy Assistance, DEP's Environmental Cleanup and Brownfields Program, DEP's Office of Active and Abandoned Mine Operations (AAMO), DEP's Office of Oil and Gas Management, DEP's Bureau of Radiation Protection Bureau of Waste Management, and the Office of Water Management plans), and other regulations and standards of the Department concerning anti-pollution measures all as amended to date. Each Contractor will be solely responsible for any violations and shall be responsible for securing permits, when required.

E. Burning - On-site burning is not permitted by the Owner. Burning of materials from clearing and grubbing operations, periodic and final clean-up and all related construction at any other location shall be governed by local codes and ordinances and the Regulations of the Department. For each day that the Contractor may contemplate open burning, he shall secure written approval from the appropriate Department's Regional Air Quality Control Engineer. Failure to secure permission for open burning will require each separate Contractor to remove material from project site and dispose of it in a manner acceptable to the Department's Regional Air Quality Control Engineer, and in compliance with the Solid Waste Management Act, Act dated July 7, 1980 (P.L. 380, No. 97), as amended, 35 P.S. 6018.101 et seq. If burning is permissible in a State Forest, it shall be performed in a manner approved by the Commonwealth's Department of Conservation and Natural Resources' local district forester.

F. Solid Waste - Storage, collection, transportation, processing and final disposal of solid waste shall be in accordance with regulations and standards of the Solid Waste Management Act. Immediately upon notice of award of Contract, the Contractor shall apply for the necessary permit from the Department's Regional Waste Management Coordinator and conduct waste disposal on sites approved under the permit. A copy of this permit must be submitted to the Engineer before commencing waste disposal (as specified in Section 024200), copy of the permit must also be submitted to the Department's Representative. The Department's Regional Waste Management Coordinator shall be contacted for permit and for information concerning sites already approved for conducting waste disposal.

G. If, in the Department's opinion, a dust condition develops at the site, the contractor shall utilize specific control methods including, but not limited to, water trucks and mechanical brooms to control the creation of dust.

1.04 REGULATIONS

In addition to statutes, rules, and regulations enumerated above, Contractors shall comply with the following:

A. ABBREVIATIONS

§	Section
CPC	Commonwealth Procurement Code
C.S.	Consolidated Statute
et seq.	"and the following"
No.	Acts are numbered consecutively within the year of their legislative action
P.L.	Pamphlet Law
P.S.	Pennsylvania Statute
T	Title (generally designated as a number)

B. PART I - PENNSYLVANIA STATUTES

1. Key Pennsylvania Pollution Prevention Statutes & Regulations and hereinafter listed Purdon's Statutes:

   Environmental Rights Amendment (Article I, Section 27) of the Pennsylvania Constitution

   Pennsylvania Code - Title 25 Environmental Protection

Air Pollution Control Act (Title 35 P.S., Chapter 23)

Pennsylvania's Clean Streams Law (35 P.S. §§ 691.1–691.1001)

Solid Waste Management Act (35 P.S. §§ 6018.101-6018.1003); Solid Waste Management Act of 1980

Small Business and Household Pollution Prevention Program Act (Act 190 of 1996)

Land Recycling and Environmental Remediation Standards Act — governs cleanup and reuse of contaminated sites.

Hazardous Sites Cleanup Act — addresses contamination at sites posing environmental risk.

Storage Tank and Spill Prevention Act — regulates storage tanks and requires cleanup of petroleum or hazardous substance spills.

Pennsylvania Safe Drinking Water Act — protects groundwater and drinking water sources.

Environmental regulations in Title 25 of the Pennsylvania Code implementing these statutory programs (e.g., DEP air and water quality rules).

Water Pollution (25 Pa. Code § 91.34, 91.6, 92a.10)

Covered Device Recycling Act

2. Purdon's Statutes - Title 3 (Agriculture)

PA Pesticide Control Act of 1973, Act of March 1, 1974 (P.L. 90, No. 24), as amended, 3 P.S. 111.21 et seq.

Agricultural Liming Materials Act, Act of March 17, 1978 (P.L. 15, No. 9), as amended, 3 P.S. 132-1 et seq.

Noxious Weed Control Law, Act of April 7, 1982 (P.L. 228, No. 74), as amended, 3 P.S. 255.1 et seq.

Plant Pest Act, Act of December 16, 1992 (P.L. 1228, No. 162), as amended, 3 P.S. 258.1 et seq.

Conservation District Law, Act of May 15, 1945 (P.L. 547), as amended, 3 P.S. 849 et seq.

(Relating to Weather Modification), Act of January 19, 1968 (P.L. (1967) 1024), as amended, 3 P.S. 1101 et seq.

(Relating to Nutrient and Odor Management), Act of July 6, 2005 (No. 38), as amended, 3 Pa. C.S. 501 et seq.

Soil and Plant Amendment Act, Act of December 13, 2001 (P.L. 876, No. 97), as amended, 3 Pa. C.S.A. 6901 et seq.

Seed Act, Act of November 29, 2004 (P.L. 1302, No. 164), as amended, 3 PA. C.S.A. 7101 et seq.

3. Purdon's Statutes - Title 16 (Counties)

   (Relating to Land Use), Act of January 13, 1966 (P.L. (1965) 1292), as amended, 16 P.S. 11941 et seq.

4. Purdon's Statutes - Title 18 (Crimes and Offenses)

   The Crimes Code, Act of December 6, 1972 (P.L. 1482, No. 334), as amended, 18 Pa. C. S. A. 101 et seq.

5. Not Used

6. Purdon's Statutes - Title 30 (Fish)

   The Fish and Boat Code, Act of October 16, 1980 (P.L. 996, No. 175), as amended, 30 Pa. C. S. A. 101 et seq.

7. Purdon's Statutes - Title 32 (Forests, Waters and State Parks)

   (Relating to Water Power and Water Supply Permits), Act of June 14, 1923 (P.L. 704), as amended, 32 P.S. 591 et seq.

   Water Well Drillers License Act, Act of May 29, 1956 (P.L. (1955) 1840), as amended, 32 P.S. 645.1 et seq.

   (Relating to Flood Control), Act of August 7, 1936 (P.L. 106, 1st Ex. Sess., No. 46), as amended, 32 P.S. 653 et seq.

   Flood Plain Management Act, Act of October 4, 1978 (P.L. 851, No. 166), as amended, 32 P.S. 679.101 et seq.

   Storm Water Management Act, Act of October 4, 1978 (P.L. 864, No. 167), as amended, 32 P.S. 680.1 et seq.

   Dam Safety and Encroachments Act, Act of November 26, 1978 (P.L. 1375, No. 325), as amended, 32 P.S. 693.1 et seq.

   (Relating to Stream Clearance), Act of June 5, 1947 (P.L. 422), as amended, 32 P.S. 701 et seq.

   (Relating to Potomac River Pollution), Act of May 29, 1945 (P.L. 1134), as amended, 32 P.S. 741 et seq.

   (Relating to Schuylkill River Pollution), Act of June 4, 1945 (P.L. 1383), as amended, 32 P.S. 751.1 et seq.

   (Relating to Delaware River Pollution), Act of April 19, 1945 (P.L. 272), as amended, 32 P.S. 815.31 et seq.

Delaware River Basin Compact, Act of July 7, 1961 (P.L. 518), as amended, 32 P.S. 815.101 et seq.

Ohio River Valley Water Sanitation Compact, Act of April 2, 1945 (P.L. 103), as amended, 32 P.S. 816.1 et seq.

Great Lakes Protection Fund Act, Act of July 6, 1989 (P.L. 215, No. 34), as amended, 32 P.S. 817.11 et seq.

Brandywine River Valley Compact, Act of September 9, 1959 (P.L. 848), as amended, 32 P.S. 818 et seq.

Wheeling Creek Watershed Protection and Flood Prevention District Compact, Act of August 2, 1967 (P.L. 189), as amended, 32 P.S. 819.1 et seq.

Susquehanna River Basin Compact, Act of July 17, 1968 (P.L. 368, No. 181), as amended, 32 P.S. 820.1 et seq.

Chesapeake Bay Commission Agreement, Act of June 25, 1985 (P.L. 64, No. 25), as amended, 32 P.S. 820.11 et seq.

(Relating to Preservation and Acquisition of Land for Open Space Uses), Act of January 19, 1968 (P.L. (1967) 992), as amended, 32 P.S. 5001 et seq.

Land and Water Conservation and Reclamation Act, Act of January 19, 1968 (P.L. (1967) 996), as amended, 32 P.S. 5101 et seq.

Bluff Recession and Setback Act, Act of May 13, 1980 (P.L. 122, No. 48), as amended, 32 P.S. 5201 et seq.

Wild Resource Conservation Act, Act of June 23, 1982 (P.L. 597, No. 170), as amended, 32 P.S. 5301 et seq.

Cave Protection Act, Act of November 21, 1990 (P.L. 539, No. 133), as amended, 32 P.S. 5601 et seq.

Rails to Trails Act, Act of December 18, 1990 (P.L. 748, No. 188), as amended, 32 P.S. 5611 et seq.

8. Purdon’s Statutes - Title 34 (Game)

   The Game and Wildlife Code, Act of July 8, 1986 (P.L. 442, No. 93), as amended, 34 Pa. C.S.A. 101 et seq.

9. Purdon’s Statutes - Title 35 (Health and Safety)

   (Related to Public Eating and Drinking Places), Act of May 23, 1945 (P.L. 926), as amended, 35 P.S. 655.1 et seq.

   The Public Bathing Law, Act of June 23, 1931 (P.L. 899), as amended, 35 P.S. 672 et seq.

   The Clean Streams Law, Act of June 22, 1937 (P.L. 1987), as amended, 35 P.S. 691.1 et seq.

PA Safe Drinking Water Act, Act of May 1, 1984 (P.L. 206, No. 43), as amended, 35 P.S. 721.1 et seq.

Phosphate Detergent Act, Act of July 5, 1989 (P.L. 166, No. 31), as amended, 35 P.S. 722.1 et seq.

Plumbing System Lead Ban and Notification Act, Act of July 6, 1989 (P.L. 207, No. 33), as amended, 35 P.S. 723.1 et seq.

PA Sewage Facilities Act, Act of January 24, 1966 (P.L. (1965) 1535), as amended, 35 P.S. 750.1 et seq.

Publicly Owned Treatment Works Penalty Law, Act of March 26, 1992 (P.L. 23, No. 9), as amended, 35 P.S. 752.1 et seq.

PA Solid Waste-Resource Recovery Development Act, Act of July 20, 1974 (P.L. 572, No. 198), as amended, 35 P.S. 755.1 et seq.

(Related to Pollution from Abandoned Mines), Act of December 15, 1965 (P.L. 1075), as amended, 35 P.S. 760.1 et seq.

Sewage System Cleaner Control Act, Act of May 28, 1992 (P.L. 249, No. 41), as amended, 35 P.S. 770.1 et seq.

Combustible and Flammable Liquids Act, Act of February 11, 1998 (P.L. 58, No. 15), as amended, 35 P.S. 1241 et seq.

(Related to Camp Regulation), Act of November 10, 1959 (P.L. 1400), as amended, 35 P.S. 3001 et seq.

Air Pollution Control Act, Act of January 8, 1960 (P.L. (1959) 2119), as amended, 35 P.S. 4001 et seq.

(Related to Noise Pollution), Act of June 2, 1988 (P.L. 452, No. 74), as amended, 35 P.S. 4501 et seq.

Lead Certification Act, Act of July 6, 1995 (P.L. 291, No. 44), as amended, 35 P.S. 5901 et seq.

Solid Waste Management Act, Act of July 7, 1980 (P.L. 380, No. 97), as amended, 35 P.S. 6018.101 et seq.

(Related to Infectious and Chemotherapeutic Waste Disposal), Act of July 13, 1988 (P.L. 525, No. 93), as amended, 35 P.S. 6019.1 et seq.

Hazardous Sites Cleanup Act, Act of October 18, 1988 (P.L. 756, No. 108), as amended, 35 P.S. 6020.101 et seq.

Storage Tank and Spill Prevention Act, Act of July 6, 1989 (P.L. 169, No. 32), as amended, 35 P.S. 6021.101 et seq.

Hazardous Material Emergency Planning and Response Act, Act of December 7, 1990 (P.L. 639, No. 165), as amended, 35 P.S. 6022.101 et seq.

Oil Spill Responder Liability Act, Act of June 11, 1992 (P.L. 303, No. 52), as amended, 35 P.S. 6023.1 et seq.

Land Recycling and Environmental Remediation Standards Act, Act of May 19, 1995 (P.L. 4, No. 2), as amended, 35 P.S. 6026.101 et seq.

Radiation Protection Act, Act of July 10, 1984 (P.L. 688, No. 147), as amended, 35 P.S. 7110.101 et seq.

Low-Level Radioactive Waste Disposal Act, Act of February 9, 1988 (P.L. 31, No. 12), as amended, 35 P.S. 7130.101 et seq.

Waste Tire Recycling Act, Act of December 19, 1996 (P.L. 1478, No. 190), as amended, 35 P.S. 6029.101 et seq.

Worker and Community Right-to-Know Act, Act of October 5, 1984 (P.L. 734, No. 159), as amended, 35 P.S. 7301 et seq.

10. Purdon's Statutes - Title 36 (Highways and Bridges)

    State Highway Law, Act of June 1, 1945 (P.L. 1242), as amended, 36 P.S. 670-101 et seq.

    (Related to Junkyards Along Highways), Act of July 28, 1966 (P.L. 91, Sp. Sess.), as amended, 36 P.S. 2719.1 et seq.

    Highway Vegetation Control Act, Act of December 20, 1983 (P.L. 293, No. 79), as amended, 36 P.S. 2720.1 et seq.

11. Purdon's Statutes - Title 37 (Historical and Museums)

    History Code, Act of May 26, 1988 (P.L. 414, No. 72), as amended, 37 Pa. C.S.A. 101 et seq.

12. Purdon's Statutes - Title 43 (Labor)

    (Related to General Safety), Act of May 18, 1937 (P.L. 654), as amended, 43 P.S. 25-1 et seq.

    Seasonal Farm Labor Act, Act of June 23, 1978 (P.L. 537, No. 93), as amended, 43 P.S. 1301.101 et seq.

13. Purdon's Statutes - Title 52 (Mines and Mining)

    The Coal Mine Sealing Act of 1947, Act of June 30, 1947 (P.L. 1177), as amended, 52 P.S. 28.1 et seq.

    Coal Refuse Disposal Control Act, Act of September 24, 1968 (P.L. 1040, No. 318), as amended, 52 P.S. 30.51 et seq.

    (Related to Coal Land Improvement), Act of July 19, 1965 (P.L. 216, No. 117), as amended, 52 P.S. 30.101 et seq.

    (Related to Mine Fires and Subsidence), Act of April 3, 1968 (P.L. 92, No. 42), as amended, 52 P.S. 30.201 et seq.

PA Anthracite Coal Mine Act, Act of November 10, 1965 (P.L. 721, No. 346), as amended, 52 P.S. 70-101 et seq.

(Related to Discharge of Coal into Banks of Streams), Act of June 27, 1913 (P.L. 640), as amended, 52 P.S. 631 et seq.

(Related to Caving-in, Collapse, Subsidence), Act of May 27, 1921 (P.L. 1198), as amended, 52 P.S. 661 et seq.

(Related to Subsidence), Act of September 20, 1961 (P.L. 1538), as amended, 52 P.S. 672.1 et seq.

Anthracite Strip Mining and Conservation Act, Act of June 27, 1947 (P.L. 1095), as amended, 52 P.S. 681.1 et seq.

(Related to Control and Drainage of Water from Coal Formations), Act of July 7, 1955 (P.L. 258), as amended, 52 P.S. 682 et seq.

PA Bituminous Coal Mine Act, Act of July 17, 1961 (P.L. 659), as amended, 52 P.S. 701-101 et seq.

(Related to Abandoned Mines), Act of May 7, 1935 (P.L. 141), as amended, 52 P.S. 809 et seq.

(Related to Maps and Plans), Act of June 15, 1911 (P.L. 954), as amended, 52 P.S. 823 et seq.

Surface Mining Conservation and Reclamation Act, Act of May 31, 1945 (P.L. 1198), as amended, 52 P.S. 1396.1 et seq.

The Bituminous Mine Subsidence and Land Conservation Act, Act of April 27, 1966 (P.L. 31, 1st Sp. Sess.), as amended, 52 P.S. 1406.1 et seq.

(Related to Cave-in or Subsidence of Surface Above Mines), Act of July 2, 1937 (P.L. 2787), as amended, 52 P.S. 1407 et seq.

(Related to Coal Stripping), Act of June 18, 1941 (P.L. 133), as amended, 52 P.S. 1471 et seq.

(Related to Coal under State Lands), Act of June 1, 1933 (P.L. 1409), as amended, 52 P.S. 1501 et seq.

(Related to Mining Safety Zones), Act of December 22, 1959 (P.L. 1994), as amended, 52 P.S. 3101 et seq.

(Related to Coal Mine Subsidence Insurance Fund), Act of August 23, 1961 (P.L. 1068), as amended, 52 P.S. 3201 et seq.

Interstate Mining Compact, Act of May 5, 1966 (P.L. 40, Sp. Sess. No. 1), as amended, 52 P.S. 3251 et seq.

Non-coal Surface Mining Conservation and Reclamation Act, Act of December 19, 1984 (P.L. 1093, No. 219), as amended, 52 P.S. 3301 et seq.

14. Purdon's Statutes - Title 53 (Municipal Corporations)

Municipal Waste Planning, Recycling and Waste Reduction Act, Act of July 28, 1988 (P.L. 556, No. 101), as amended, 53 P.S. 4000.101 et seq.

15. Purdon's Statutes - Title 58 (Oil and Gas)

    Oil and Gas Conservation Law, Act of July 25, 1961 (P.L. 825), as amended, 58 P.S. 401 et seq.

    PA Used Oil Recycling Act, Act of April 9, 1982 (P.L. 314, No. 89), as amended, 58 P.S. 471 et seq.

    Coal and Gas Resource Coordination Act, Act of December 18, 1984 (P.L. 1069, No. 214), as amended, 58 P.S. 501 et seq.

    Oil and Gas Act, Act of December 19, 1984 (P.L. 1140, No. 223), as amended, 58 P.S. 601.101 et seq.

16. Purdon's Statutes - Title 63 (Professions and Occupations)

    Waste and Wastewater Systems Operators' Certification Act, Act of November 18, 1968 (P.L. 1052, No. 322), as amended, 63 P.S. 1001 et seq.

17. Purdon's Statutes - Title 64 (Public Lands)

    PA Appalachian Trail Act, Act of April 28, 1978 (P.L. 87, No. 41), as amended, 64 P.S. 801 et seq.

18. Purdon's Statutes - Title 71 (State Government)

    The Administrative Code of 1929, Act of April 9, 1929 (P.L. 177, No. 175), as amended, 71 P.S. 51 et seq.

    Conservation and Natural Resources Act, Act of June 28, 1995 (P.L. 89, No. 18), as amended, 71 P.S. 1340.101 et seq.

19. Purdon's Statutes - Title 72 (Taxation and Fiscal Affairs)

    Project 70 Land Acquisition and Borrowing Act, Act of June 22, 1964 (P.L. 131, Sp. Sess., No. 8), as amended, 72 P.S. 3946.1 et seq.

    (Related to Pollution Control Devices), Act of March 4, 1971 (P.L. 6, No. 2), as amended, 72 P.S. 7602.1 et seq.

20. Purdon's Statutes - Title 73 (Trade and Commerce)

    (Related to Explosives), Act of July 1, 1937 (P.L. 2681), as amended, 73 P.S. 151 et seq.

    (Related to Explosives), Act of July 10, 1957 (P.L. 685), as amended, 73 P.S. 164 et seq.

    (Related to Black Powder), Act of May 31, 1974 (P.L. 304, No. 96), as amended, 73 P.S. 169 et seq.

    (Related to Excavation and Demolition), Act of December 10, 1974 (P.L. 852, No. 287), as amended, 73 P.S. 176 et seq.

Site Development Act, Act of May 6, 1968 (P.L. 117, No. 61), as amended, 73 P.S. 361 et seq.

21. Purdon's Statutes - Title 75 (Vehicles)

    Vehicle Code, Act of June 17, 1976 (P.L. 162, No. 81), as amended, 75 Pa. C.S.A. 101 et seq.

    Snowmobile and All-Terrain Vehicle Law, Act of June 17, 1976 (P.L. 162, No. 81), as amended, 75 Pa. C. S. A. 7701 et seq.

    (Related to Hazardous Materials Transport), Act of June 30, 1984 (P.L. 473, No. 99), as amended, 75 Pa. C.S.A. 8301 et seq.

22. Purdon's Statutes - Title 77 (Workmen's Compensation)

    PA Workmen's Compensation Act, Act of June 2, 1915 (P.L. 736), as amended, 77 P.S. 1 et seq.

    PA Occupational Disease Act, Act of June 21, 1939 (P.L. 566, No. 284), as amended, 77 P.S. 1201 et seq.

C. PART II - FEDERAL STATUTES

Acid Precipitation Act of 1980 (42 U.S.C. 8901-8912)

Act to Prevent Pollution from Ships (33 U.S.C. 1901-1912)

Asbestos Hazard Emergency Response Act of 1986 (see Toxic Substances Control Act Sections 201-214 (15 U.S.C. 2641-2654))

Atomic Energy Act of 1954 (42 U.S.C. 2014, 2021, 2021a, 2022, 2111, 2113, 2114)

Clean Air Act (42 U.S.C. 7401-7642)

Clean Water Act (see Federal Water Pollution Control Act)

Coastal Wetlands Planning, Protection and Restoration Act (16 U.S.C. 3951-3956)

Coastal Zone Management Act of 1972 (16 U.S.C. 1451-1464)

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601-9675)

Emergency Planning and Community Right-To-Know Act of 1986 (42 U.S.C. 11001-11050)

Endangered Species Act of 1973 (16 U.S.C. 1531-1544)

Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 791-798)

Environmental Quality Improvement Act of 1970 (42 U.S.C. 4371-4375)

Federal Facility Compliance Act of 1992 (42 U.S.C. 6901 note)

Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136-136y)

Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701-1784)

Federal Water Pollution Control Act (33 U.S.C. 1251-1387)

Global Climate Protection Act of 1987 (15 U.S.C. 2901 note)

Hazardous Substance Response Revenue Act of 1980 (see 26 U.S.C. 4611, 4612, 4661, 4662)

Healthy Forest Reforestation Act of 2003 (see 16 U.S.C. 6501-6591)

Lead-Based Paint Exposure Reduction Act (15 U.S.C. 2681-2692)

Lead Contamination Control Act of 1988 (42 U.S.C. 300j-21 to 300j-25)

Low-Level Radioactive Waste Policy Act (42 U.S.C. 2021b-2021d)

Marine Protection, Research, and Sanctuaries Act of 1972 (33 U.S.C. 1401-1445)

Mining and Mineral Resources Research Institute Act of 1984 (30 U.S.C. 1221-1230)

National Climate Program Act (15 U.S.C. 2901-2908)

National Contaminated Sediment Assessment and Management Act (33 U.S.C. 1271 note)

National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321-4370b)

National Historic Preservation Act (NHPA) - Section 106 (54 U.S.C. 306108)

National Invasive Species Act of 1996 (16 U.S.C. 4701-4751)

National Ocean Pollution Planning Act of 1978 (33 U.S.C. 1701-1709)

Noise Control Act of 1972 (42 U.S.C. 4901-4918)

Nuclear Waste Policy Act of 1982 (42 U.S.C. 10101-10270)

Oil Pollution Act of 1990 (33 U.S.C. 2701-2761)

Outer Continental Shelf Land Act Amendments of 1978 (43 U.S.C. 1801-1866)

Pollution Prevention Act of 1990 (42 U.S.C. 13101-13109)

Public Health Service Act (42 U.S.C. 300f-300j-11)

Renewable Resources Extension Act of 1978 (16 U.S.C. 1671-1676)

Resource Conservation and Recovery Act of 1976 (42 U.S.C. 6901-699li)

Safe Drinking Water Act (see Public Health Service Act Sections 1401-1451 (42 U.S.C. 300f-300j-26))

Safe Drinking Water Act Amendments of 1996 (42 U.S.C. 300f-300j-18)

Soil and Water Resources Conservation Act of 1977 (16 U.S.C. 2001-2009)

Solid Waste Disposal Act (42 U.S.C. 6901-6992k)

Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201-1328)

Toxic Substances Control Act (15 U.S.C. 2601-2692)

Wood Residue Utilization Act of 1980 (16 U.S.C. 1681-1687)

END OF SECTION 007353

SECTION 010000 - REQUIREMENTS

PART 1 GENERAL

1.01 SCOPE

A. Separation of these specifications into divisions and sections is for convenience only and is not intended to establish limits of work. The division of the work is the Contractor's responsibility and the Architect assumes no responsibility to act as arbiter to establish subcontract limits between any sections of the work.

B. Consult index to be certain that set of documents is complete.

1.02 RELATED WORK IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00 and 02 and all other Sections of Division 01 of these Specifications.

PART 2 PRODUCTS - Not Applicable

PART 3 EXECUTION - Not Applicable

END OF SECTION 010000

SECTION 011000 - SCHEDULING REQUIREMENTS OF THE WORK

PART 1 GENERAL

1.01 SCOPE

A. All work shall be conducted in accordance with the Scheduling Requirements of the Work as hereafter specified. The Contractors shall be responsible for the means, methods and sequences to implement the specified schedule.

1. The General Contractor shall be responsible for submitting a Project Schedule incorporating other Prime Contractor's work and the hereinafter specified milestone dates, as specified in Section 007216 "General Conditions" Article 3. The General Contractor shall incorporate as separate line items within the Construction Schedule scheduling items as listed in Section 013100.
2. Coordination of the work between contractors shall include, but is not limited to, exchange of information about the extent of work, duration of work, identification of work required by others to facilitate the work and the required start, duration and finish times for the work activities.
3. All Contractors shall be responsible for submitting monthly progress schedule updates as specified in Section 007216 "General Conditions" Articles 3 and 9.
4. Note: Construction schedules representing anything less than a five day work week shall not be permitted, see also Section 007216 "General Conditions" Article 3, Paragraph 3.10.

B. The site is limited in size for both the building users and the Contractors. Site access for construction equipment/activities shall be coordinated with the Owner. Construction equipment, trailers, vehicles and material storage, if required, shall be located as directed by the Architect and Owner at the initial Job Conference. Contractors shall be restricted to this area. Only one (1) trailer will be permitted for each Prime Contractor, if needed, and shall be located in the area designated above. All other parking and material storage, which cannot take place within the area(s) designated above, shall take place off site. Failure of a Contractor to police his workmen's parking and material storage requirements shall result in withheld payments and/or fines.

1. All Contractors shall keep all access routes clean and free of debris and material at all times.
2. Temporary signage, fencing, gates, etc., shall be provided by the General Contractor to accommodate safe, on-site traffic and pedestrian movement.
3. The General Contractor shall power wash clean all existing walks and paving soiled from the construction activities on a regular basis and as requested by the Architect during the construction and at the completion of all work.
4. The General Contractor shall take all necessary safety precautions to clearly delineate the construction areas and shall provide barriers (security fences) to prevent unauthorized entry to construction areas. The General Contractor shall provide security fences around work and staging areas to restrict access to these areas.
    a. Contractors shall coordinate their work to allow for continued use of local roadways by the public, as well as access to the site for the Contractors and Owner.
    b. Also refer to Section 015000.
5. Contractors shall repair/restore any area used for staging, storage, parking, etc., as well as any areas damaged by construction activities, to original or better condition at completion of work. Any areas damaged by construction activities shall be replaced by the responsible Prime Contractor as determined by the Architect.
6. Contractors shall maintain the building and site free from soil, dust, dirt, debris, etc., from

construction activities as specified in Section 017413.23 during the construction and at the completion of all work.

C. Coordination drawings shall be completed as per Section 013100 during the timeline specified in Section 011000 so as not to delay work and to resolve field coordination issues. Failure by a Contractor to resolve space conflicts with the coordination drawings will subject the Contractor to paying for all time required by the Architect to resolve the space conflicts. The Contractor shall also make all modifications and relocations that result from lack of coordination with no additional compensation.

D. Prior to the occupancy of the Work by the Owner, the Work shall be inspected by the Code Official to ensure that all life safety items are completed and operational; as well as conduct a final inspection for accessibility.

E. The new ceiling grids shall not be installed until all work above the ceiling is coordinated and installed by all the Prime Contractors. The ceiling panels shall be the last work item installed within the room.

F. Scheduling of all work shall be coordinated with the Owner.
1. Work requiring any shut-offs / shut-downs of heating, plumbing and/or electrical services shall be scheduled with the Owner. Advance notice must be given to the Architect and the Owner when any shut-offs or shut-downs are scheduled.

G. Time Table (All references to “days” shall mean “calendar days”)
1. Submittals:
Contracts, Bonds, Insurances, Detailed Cost Breakdown and Material Source of Supply:

Start		Complete
Notice of Award	-	10 Days

Remaining Submittals, including, but not limited to Construction Schedule, Shop Drawings, Color Selectors/Samples, Coordination Drawings, etc.:

Start		Complete
Notice of Award	-	20 Days

All Shop Drawing Submittals from all Contractors shall include information on the expected lead time of materials/equipment fabrication and/or delivery. Each Prime Contractor is responsible to evaluate and identify priority submittals requiring immediate submission necessary to maintain the project schedule.

2. On-Site Construction:

Start		Complete (including all Punchlist Corrective Work)
Date of Contract	-	November 30, 2026

Completion dates specified above reflect completion of all work, punchlist completion, final cleaning, and Owner moving into all spaces.

3. Final Project Completion Dates:

FINAL PROJECT COMPLETION DATE - NOVEMBER 30, 2026

FINAL PROJECT CLOSEOUT COMPLETION DATE - DECEMBER 31, 2026

"Final Project Closeout Completion" shall be the state when the Project should be completely closed out to receive Final Payment as specified in Section 007216 "General Conditions", Article 9.10.6.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include, but are not necessarily limited to: All Sections in Division 00 and all other Sections of Division 01 of these Specifications.

B. Technical Specifications.

1.03 PROCEDURES

A. All work shall be completed by the date(s) specified above.

B. Extreme care shall be taken when working around existing utilities designated to remain.

C. At all times, Contractors shall employ all means necessary to eliminate fumes and dust within the existing building. All debris shall be removed immediately. No construction activity shall be left open to the exterior weather conditions.

D. Contractors shall take all necessary safety precautions to clearly delineate construction areas and provide barriers to prevent unauthorized entry to construction areas and to protect the general public.

E. All work shall be conducted in a manner to protect existing facilities (including but not limited to interior and exterior finishes and site conditions) and adjacent properties from damage from construction operations and demolition.

1. The existing building shall not be permitted to remain open or unprotected (day or night).
2. Contractors shall be responsible for cleaning and protecting existing features, finishes, surfaces, etc.
3. Also refer to Sections 017413.23 and 024200.

F. All construction operations creating excessive noise shall be coordinated with the Owner.

1. Contractors shall contact the local (Township/Borough/Municipality) authorities regarding any ordinances which may restrict early morning, late evening, and/or weekend work hours.

G. The scheduling requirements as outlined above have been established in an effort to cause the least disruption to the Owner. Inadequate or insufficient scheduling by the Contractors to meet the time allowance shall not result in delay claims to be filed against the Owner or the Architect. Contractors desiring to alter the above requirements for the benefit of the Project and Owner, shall submit such in writing for the Owner's and Architect's consideration. Once a revision is approved and implemented, it shall be as binding as the original schedule.

1. Contractors shall include in their bid all extra time, in any form such as shift work, overtime, and premium time, necessary to meet these scheduling requirements. As specified in Section 007216 "General Conditions", Article 3, Paragraph 3.3.2, any claims for additional costs associated with completion of the Work within the required Contract time frames will not be considered.
2. Failure to meet the final project completion date for construction work, including punch list work,

shall result with the specified liquidated damages being assessed (Section 002000).

H. After Owner occupancy of premises, coordinate access to site for correction of defective Work and work not in accord with Contract Documents, to minimize disruption of Owner's activities.

END OF SECTION 011000

SECTION 012300 - ALTERNATES

PART 1 GENERAL

1.01 SCOPE

A. Bids shall be entered in the proper spaces of Proposal for Contract.

B. Refer to drawings and/or see applicable sections of the specifications for labor and materials involved in each Alternate Bid.

C. Amount shown in bid, for each alternate, shall include the making of all changes, and the installation of all materials and equipment necessary to the accomplishment of the alternate requirements in accordance with the contract documents.

1.02 RELATED WORK IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Division 00 and all other Sections of Division 01 of these Specifications.

B. It shall be the Contractor's responsibility to review all related documents for the work of all trades involved with each Alternate Bid. The Contractor shall understand the extent of work added or deleted for each trade and shall properly coordinate the work to provide a complete and workable system.

C. It shall be this Contractor's responsibility to secure and review the related alternate bids for all of the other separate contracts for this project. The Contractor shall understand the extent of work added or deleted from all contracts and shall properly coordinate his work to provide a complete and workable system. Plans and specifications for all contracts are available for viewing or purchase as defined in "Instructions to Bidders".

1.03 ALTERNATE BIDS - CONTRACT NO. 1 - GENERAL CONSTRUCTION

A. Alternate Bid No. G-1 shall be the amount to be **ADDED TO** the Base Bid for providing the translucent polycarbonate-panel canopy assembly as specified in Section 107316 and all related work as shown on drawings.

1.04 ALTERNATE BIDS - CONTRACT NO. 2 - HVAC CONSTRUCTION

A. Refer to HVAC Section 230512 - HVAC Alternates, for description of Alternate Bids as follows:
   1. Alternate Bid No. H-1 to provide dehumidification air handling unit (DAHU-1) in lieu of air handling unit (AHU-1). **(ADD or DEDUCT).**

1.05 ALTERNATE BIDS - CONTRACT NO. 3 - PLUMBING CONSTRUCTION

A. There are no Alternate Bids under this Contract.

1.06 ALTERNATE BIDS - CONTRACT NO. 4 - ELECTRICAL CONSTRUCTION

A. Alternate Bid No. E-1 shall be the amount to be **ADDED TO or DEDUCTED FROM** the Base Bid for providing electrical work associated with Alternate Bid No. H-1.

END OF SECTION 012300

SECTION 012513 - PRODUCT SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SUBSTITUTIONS

A. Substitution requests shall be submitted on Product Substitution Form - Section 012513.25 within time restrictions as herein described and conforming to requirements specified in this section:

1. Any request for product substitution must be submitted for review, with all necessary documentation, at least ten working days (i.e., Monday through Friday, excluding legal holidays) prior to time for receipt of bids.
2. After end of that period, requests will be considered only in case of product unavailability or other conditions beyond the control of the Contractor.
3. Requests for substitution of materials or products by E-mail must be complete on Architect's forms with all accompanying information edited clearly to indicate equivalency to specified product/fixture/equipment.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Support each request with:

1. Itemized comparison of the proposed substitution with product specified, list all variations.
    a. Product identification, including manufacturer's name and address.
        1) Product description.
        2) Reference standards.
        3) Performance and test data.
    b. Samples: Submit full size working samples for Architect's review of all items requested.
    c. Name and address of similar projects on which product has been used, and date of each installation.
2. Change in construction schedule.
3. Effect of substitution on other separate contracts.
4. List of changes required in other work or products.
5. Accurate cost data comparing proposed substitution with product specified.
    a. Amount of any net change to Contract Sum.

C. A request constitutes a representation that the bidder or Contractor:

1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
2. Will provide the same warranty for the substitution as for the specified product.
3. Will coordinate installation and make changes to other work which may be required for the work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.
6. Cost data is complete, and includes cost related to his contract, but not cost under other separate contracts.

D. Substitutions will not be considered when they are indicated or implied on shop drawings or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

E. Substitute products which are ordered or installed without written acceptance of Architect/Engineer

shall be rejected and full cost resulting therefrom shall be the contractor's responsibility.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Division 00 and all other Sections of Division 01 of these Specifications.

B. Product Substitution Form - Section 012513.25.

C. In addition to procedures described in this Section, comply with requirements for substitutions as may be specified in Technical Specification Sections of this Project Manual.

END OF SECTION 012513

SECTION 012513.25 - PRODUCT SUBSTITUTION FORM

1. Submissions for approved substitution will be permitted and processed in accord with Section 012513 “Product Substitution Procedures”.

2. Submissions will be "Received Dated" immediately upon arrival at the office of HHSDR, Architects/Engineers.

3. Submissions will be filed until they are reviewed.

4. Submissions will not be reviewed for completeness or compliance after the tenth working day prior to the bid due date at 5:00 PM.

5. Submittals will be reviewed by members of the project teams.

6. The Reviewer's General Criteria for Review will be:

   A. The burden of proof of performance equality and the completeness of this submittal is the responsibility of the submitter.

   B. The reviewer will not be required to complete the submittal, that is, select from options or between models and lines of products.

   C. The reviewer will not be required to seek information from the manufacturer's literature on file in the office, or information from other locations.

   D. The product must be equal, or better in those features and performance which the specified product provides.

   E. When in the reviewer's opinion significant deficiencies are established, further review of submitted data is not required.

7. The reviewer will note action (approval or disapproval), the date, and his initials.

8. If a submittal is disapproved, reviewer will make notations that will be adequate to guide a later reviewer to the same conclusion. Sample notations may be "Submittal vague", "incomplete", or "product equality not substantiated".

9. Approval of a substituted item will be communicated to Bidders in the form of an Addendum.

10. Any substitution requests made after receipt of bids shall be submitted through the awarded Contractor.

END OF TEXT
(FORM FOLLOWS)

SUBSTITUTION REQUEST FORM

PROJECT _____

CONTRACTOR/SUPPLIER _____

We hereby submit for consideration, the following product instead of specified item for above project.

SECTION/DRAWING _____ PARAGRAPH/DETAIL _____ SPECIFIED ITEM _____

Proposed substitution: _____

ATTACHMENTS: (If not applicable, write N/A in space provided)

No.1 Complete Product Data, including technical data and laboratory tests, if applicable.

_____

No. 2 Drawings showing dimensional changes. _____

No. 3 Complete description of changes to drawings and/or specifications which proposed substitution will require for its proper installation.

_____

_____

No. 4 Necessary samples and substantiating data to prove equal quality, performance and appearance to that which is specified. Clearly mark manufacturer's literature to indicate quality in performance. Differences in quality of materials and construction shall be indicated.

_____

_____

No. 5 List of names and address of three (3) similar projects on which product was used, date of installation, and Architect/Engineer's name, address, and telephone numbers.

_____

_____

_____

_____

_____

Fill in blanks below (provide attachments if more space is necessary).

A. Does the substitution affect dimensions indicated on the Contract Drawings?

Yes ____ No _____ If yes, clearly indicate changes: _____

_____

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

_____

C. What effect does substitution have on other trades, other contracts, and Contract Completion Date?

D. What effect does substitution have on applicable code requirements?

E. List differences between proposed substitution and specified items:

F. Identify manufacturer's guarantees:

G. Identify cost impact:

Undersigned attests function and quality equivalent or superior to specified item.

CERTIFICATION OF EQUAL PERFORMANCE:

Submitted by: Title:
Firm:
Address:

Telephone: Date:

Signature:

* * * * * * * * * * * * *

For Use by the Architect/Engineer:

Accepted: Accepted as Noted

Not Accepted Received Too Late

By: Date:

Remarks:

SECTION 013100 - PROJECT MANAGEMENT & COORDINATION

PART 1 GENERAL

1.01 SCOPE

A. Work included: All Contractors shall coordinate the requirements of their work for uninterrupted performance of the work to the date of completion.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include, but are not necessarily limited to: All Sections in Division 00 and all other Sections of Division 01 of these Specifications.

B. Technical Specifications

1.03 COORDINATION

A. The General Contractor is designated as the Lead Contractor for the Project as specified in the General Conditions Section 007216 Article 3, Paragraph 3.3.1.1. The General Contractor shall prepare and submit a comprehensive construction schedule as specified in the General Conditions Section 007216 Article 3, Paragraph 3.10.1. All Contractors shall coordinate the requirements of their work with the General Contractor so that the construction schedule will indicate the obligations of each Contractor for uninterrupted performance of the work to the date of completion.

1. Coordination of the work between contractors shall include, but is not limited to, exchange of information about the extent of work, duration of work, identification of work required by others to facilitate the work and the required start, duration and finish times for the work activities.
2. The General Contractor shall incorporate as separate line items within the Construction Schedule dates as follows:
    a. schedules for construction testing as specified in separate technical sections of each Contract/trade and/or as required by the PA UBC, including but not limited to:
        1) cast-in-place concrete testing (initial field test reports, seven day cylinder test reports and 28 day cylinder test reports;
        2) earthwork proofroll evaluations, foundation design bearing verification reports, and compaction testing.
        3) coordinate with other Prime Contractors to incorporate anticipated dates for HVAC, plumbing, and electrical work as required.
    b. schedules for coordination drawings. The HVAC Contractor shall be the lead contractor in completing Coordination Drawings.
    c. schedules for commissioning dates for applicable systems, as specified in separate technical sections, including but not limited to, HVAC work, electrical systems, etc.
    d. schedules for Punch Lists.
    e. release dates for ordered materials.

B. Each Prime Contractor shall verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Each Prime Contractor shall coordinate scheduling, submittals, and Work of the various sections of

specifications to assure efficient and orderly sequence of installation of interdependent construction elements with provisions for accommodating items to be installed later.

D. Each Prime Contractor shall coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on the Contract Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

1. Each Prime Contractor shall be responsible for coordinating and reporting the work of their respective sub-contractors.

E. Meetings

1. Job conferences will be held while construction is in progress, as specified in the General Conditions, Section 007216 Article 3, Paragraph 3.16.2. Each Contractor's representative shall be in attendance. Problems of co-ordination and clarifications shall be reviewed and discussed at these conferences.
2. Contractors shall initiate additional coordination meetings as required to resolve interferences in the Work. Each Contractor shall provide all necessary resources to ensure that the coordination process described herein does not delay the Approved Project Schedule.

1.04 COORDINATION DRAWINGS

A. Coordination drawings shall be prepared for review by all Prime Contractors; coordination drawings shall include but not be limited to the following. The Contract Documents will be used as guide, with final approved coordination drawings governing installation sequence.

1. The HVAC Contractor shall be the lead contractor in completing Coordination Drawings. The HVAC, Plumbing, and Electrical Contractors shall each prepare coordination drawings of routing of conduit, ductwork and piping. Ductwork/piping coordination drawings shall be distributed within fifteen (15) days of the Date of Contract. The HVAC Contractor shall provide the final composite coordination drawings within twenty (20) days of the Date of Contract to each Contractor, the Architect, and the Owner. The HVAC Contractor shall prepare CAD coordination drawings to forward to each Prime Contractor for layout of their work; each Prime Contractor shall show his work on the CAD coordination drawings and sign and date his entry. All interference issues shall be resolved.
2. General Contractor shall prepare lay-in ceiling coordination drawings for project use. Coordination drawings shall be distributed within twenty-five (25) days of the Date of Contract. The General Contractor shall show the layout of lay-in ceilings on the HVAC Contractor's CAD coordination drawings.
3. Contract Documents will not be available in certain electronic formats, i.e., AutoCAD, Microsoft Word, etc., for use by Contractors in preparation of Coordination Drawings. Contractors shall have limited access to portable document format (.pdf) files of Contract Documents.

B. Each Contractor shall thoroughly review the coordination drawings of the other Prime Contractors and shall modify his intended routing or installation location to suit the requirements shown. The General and Electrical Contractors shall review the HVAC and Plumbing Contractors' coordination drawings regarding reflective ceiling plans, lighting fixture layout, conduit routing, cable tray routing, etc., sufficient to coordinate the work of all the Prime Contractors. Each Prime Contractor shall add their particular trade item affecting coordination of the work.

C. Once reviewed, commented on, and approved by each Prime Contractor, the HVAC Contractor shall submit two (2) hard copies to the Architect/Engineer with any revisions to Contract Documents clearly

identified for the Architect's/Engineer's review, prior to work proceeding. The HVAC Contractor shall be responsible for distributing the final composite coordination drawings (hard copy format) to each Prime Contractor requiring coordination of said work, the Architect, and the Owner's Representative.

1. Contractors shall maintain on-site, one copy of Final Composite Coordination Drawings as Record Documents (for their Contract), for future reference in the event of conflict between the trades and to record any agreed/approved upon revisions. The HVAC Contractor shall be responsible for coordinating any revisions by all Contractors onto a comprehensive set of Final Composite Coordination Drawings to be turned over to the Owner for the Owner's records at completion of the work. As specified in Section 017700, in addition to submittal of "hard" copies of all documents, Contractor shall submit "CD" of scanned .pdf's of all marked up documents.

1.05 PRE-INSTALLATION CONFERENCES

A. When required in individual specification sections, the Architect shall convene a Pre-installation Conference at the work site prior to commencing work of the section. The purpose of Pre-installation Conferences includes, but is not limited to, review conditions of installation, preparation, installation procedures, and coordination with related work. Pre-installation Conferences include, but may not be limited to the following:

1. Earthwork
2. Cast-in-Place Concrete
3. Roofing
4. Windows
5. Door Hardware
6. Tilework
7. Finish Flooring
8. Painting
9. Seeding
10. HVAC Temperature Controls
11. Lighting & Control Systems
12. A representative of each Prime Contractor is required to attend Pre-installation Conferences on earthwork, concrete, and roofing for the coordination of the work.
13. The Prime Contractor, responsible for performing the work, shall indicate in writing which work of other separate Prime Contractors he will need information about in order to coordinate the work of other Prime Contracts properly.

B. The Prime Contractor responsible for the work to be reviewed during the Pre-installation Conference shall coordinate a meeting date with the Architect and then notify those to attend at least five days in advance of meeting date. Required attendees:

1. Prime Contractor and his sub-contractor responsible for the work; all applicable material suppliers, manufacturer's technical representatives, and testing agency representatives; representative(s) of the Architect/Engineer; Owner's representative; and appropriate representatives of other Prime Contractors as designated in Paragraph 1.05.A.12 and 13.
2. If everything as specified for the pre-installation conference meeting (i.e., all submittals, meeting attendees, etc.) are not in order and the meeting cannot be held and/or cannot be productive, the Prime Contractor responsible for coordinating the meeting will be charged by the Owner and another date will be established.

C. The Architect shall be responsible for the following:

1. Prepare agenda, chair the meeting, record minutes, and distribute copies after conference to participants.

1.06 SITE SAMPLES TO BE REVIEWED PRIOR TO COMMENCEMENT OF WORK

A. When required in individual specification sections, prior to commencement of certain work on site, the Contractor shall prepare sample installations of specified work at the job site for review/approval by the Owner and Architect. Sample locations may be determined at certain pre-installation conferences and/or as coordinated with the Owner and Architect. Completed sample installations shall be reviewed and approved by the Architect and Owner prior to commencing with additional work on site. The reviewed/approved sample(s) shall serve as Standard(s) for the project work. Site samples to be reviewed prior to commencement of work include, but may not be limited to the following:

1. Exposed Concrete Floors – Section 033000
2. Tilework (Sample wall and floor) – Section 093000
3. Painting (Sample Wall) – Section 099000

END OF SECTION 013100

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary ventilation, sanitation facilities, trash facilities, and utilities.

B. Temporary Controls: barriers, security enclosures and fencing, and protection of the work.

1.02 RELATED SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Division 00 and all other Sections of Division 01 of these Specifications.

1.03 TEMPORARY VENTILATION

A. Each Prime Contractor, and their Subcontractors, shall provide the necessary equipment to properly ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases. Also see Paragraphs 1.12.C and 1.19.

1. In any instance, the General Contractor shall employ dehumidification equipment as required to install finishes according to technical specifications and as required to meet construction schedule.

B. Provide temporary fan units as required to maintain clean air for construction operations. Service any permanent equipment, used during construction, at project closeout to brand new condition for new equipment and repair to same or better condition for existing equipment, plus replace filters, including, but not limited to, air handling units, rooftop units, and unit ventilators. Note: permanent mechanical cooling equipment shall not be operated to ventilate spaces under construction, also see Paragraph 1.12.C., Contractors shall employ dehumidification equipment as necessary to maintain specified conditions for installations of finishes.

1.04 TEMPORARY SANITARY FACILITIES

A. The General Contractor shall provide, and maintain in a neat and sanitary condition, portable toilet accommodations for the use of all workmen engaged on the project as may be necessary to comply with all requirements and regulations of the state, local departments of health, OSHA or of agencies having jurisdiction thereof. The General Contractor shall provide necessary janitorial services, toilet paper, etc. The Contractor shall permit no public nuisance or unsanitary conditions to exist on the project site.

B. The General Contractor shall provide and maintain at least one (1) portable toilet unit near the job office trailers and additional facilities as may be required by Authorities having jurisdiction for the total number of workmen involved, including females.

C. At end of construction, remove temporary facilities, return grounds and facilities to same or better condition than adjacent environment.

1.05 BARRIERS

A. General Contractor shall take all necessary safety precautions to clearly delineate the construction areas and shall provide barriers to prevent unauthorized entry to construction areas and to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Each Prime Contractor shall provide barriers as necessary for any site utility trenching and/or excavation performed under their contracts.

C. All Contractors shall:
1. Protect existing facilities and adjacent properties from damage from construction operations and demolition.
2. Protect plant life designated to remain. Replace damaged plant life.
3. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
4. Provide and maintain OSHA approved barriers/protection at all excavations, roofs, etc. If the construction work of any Prime Contractor requires the removal of temporary controls or protection erected by another, the Prime Contractor who removed the temporary control or protection shall replace same to meet the OSHA requirements, at his expense.

D. Barriers include but may not be limited to site fencing, exterior enclosures, interior enclosures, etc., further specified throughout this Section.

1.06 FENCING

A. The General Contractor shall provide and maintain site fencing as required for jobsite safety and security. The General Contractor shall take all necessary safety precautions to protect the general public from the work, as well as, to secure the work from unauthorized access and to protect existing facilities and adjacent properties from damage from construction operations and demolition. Fencing shall include the following:
1. If required by local/state/federal regulations, the Owner and/or Architect, to maintain the safety of the general public, temporary fencing surrounding construction/staging areas shall be Commercial grade chain link fence, 9 gage, 8' minimum height, sufficient size posts to structurally support fence, and any gate as may be required to access the area.
2. Fence all trees or shrubs designated to remain, to an area sufficient to protect the tree or shrub from any possible damage. Fenced areas shall not be used for storage of materials or for any purpose likely to damage tree roots or branches. Leave fencing in place until removal is required to complete fine grading and seeding.
3. Plastic safety fence shall be required around the limits of contract, as well as, around limits of work beyond the chainlink fence as required to secure the work from the general public. Fence shall be Heavy Duty Construction Plastic (HDPE) Fence such as Tenax Orange Sentry HD Safety Fence 4'H, or equivalent product. Provide with green steel posts. Fence Mesh Size: 2.36" x 2.36" maximum.

B. The General Contractor shall be responsible to maintain and relocate, during progress of project, all temporary fencing for the duration of his contract, location and extent of fencing and location of gates shall be in accord with the directions of the Architect.

C. The General Contractor shall remove all temporary fencing at the end of the project and restore site as necessary.

1.07 MAINTENANCE AND PROTECTION OF TRAFFIC

A. Contractors shall provide and maintain vehicular traffic on all local streets during the construction. Contractors shall furnish and install all signs, barricades, flagmen, etc. necessary to control and direct traffic safely. Ingress and egress to existing facility site shall be available at all times. The maintenance and protection of traffic shall be in accordance with PennDOT Pub. 408, Section 901 “Maintenance and Protection of Traffic During Construction”, and PennDOT Pub. 213 “Temporary Traffic Control Guidelines” for work along PennDot roadways.

1.08 EXTERIOR ENCLOSURES

A. All Contractors shall maintain the existing building in a secure, weathertight condition at all times. Construction materials shall be protected during erection to prevent the accumulation of moisture/water/windblown debris within the building construction.

1. Provide temporary insulated weathertight closure of all exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons.

B. Heat within the existing building shall be maintained as specified in Paragraph 1.12.C.

1.09 CONSTRUCTION AIDS

A. Each Prime Contractor shall provide construction aids and equipment required by personnel and to facilitate execution of the work; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.

1. Refer to and comply with all applicable local, state, and federal regulations for worker safety, public safety, and fire protection.

B. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of Owner and other contractors employed at the site.

1.10 PROTECTION OF INSTALLED WORK

A. Each Prime Contractor shall:

1. Protect his installed Work and provide special protection as required by individual specification sections.
2. Provide temporary and removable protection for installed products. Control activity in immediate work area to minimize damage.
3. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
4. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
    a. All new finish flooring materials and/or finished interior exposed concrete slabs, once installed, must be completely covered by the General Contractor with material as specified in Technical Specifications for finish flooring.
    b. For movement of heavy products, lay planking or similar materials in place.
    c. For storage of products, lay tight wood sheathing in place.
    d. Cover walls and floor surfaces used by construction personnel.
5. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

6. Prohibit traffic over landscaped areas.

B. Each Prime Contractor shall be responsible to protect his installed work until such work is turned over to and accepted by the Owner in writing (i.e. Certificate of Substantial Completion). Any damage to such work shall be corrected by the Prime Contractor initially responsible for the work, regardless of how the damage was sustained. Contractors are to refer to Section 007216 General Conditions, Article 6, Paragraph 6.2.3.1 regarding claims against each other for work damaged by another Contractor.

1.11 SECURITY

A. The General Contractor shall provide facilities to protect and secure the Work, and existing facilities, and all construction operations from unauthorized entry, vandalism, or theft. This program shall be to the satisfaction of the Architect and Owner.

B. Each Prime Contractor shall be responsible for the security of their own materials and equipment stored on the project site.

C. Each Prime Contractor shall coordinate with the General Contractor's security program.

1.12 TEMPORARY UTILITES

A. Temporary Water Service
   1. The Plumbing Contractor shall maintain an adequate water supply for all Contractors during the Project. The Plumbing Contractor shall furnish all necessary materials and make connections for water service.
   2. Water lines/connections to equipment shall be installed by the Plumbing Contractor in sufficient time to be available for supplying water for testing and operation of the various systems when needed.
   3. The Owner will pay for costs of all water used during construction.
   4. Should any Contractor require special water service other than that made available, said Contractor shall be responsible for providing the necessary source or means of providing said water, including all equipment, and connections with protection. All costs pertaining to special water service shall be borne by the Contractor.
   5. When temporary lines are no longer required, they shall be removed by the installing Contractor and any part or parts of the ground or building, disturbed or damaged, shall be restored to the original condition by said Contractor.

B. Temporary Light and Power Service
   1. The Electrical Contractor shall extend and terminate temporary electrical power to construction areas (minimum 10 foot candles), at locations acceptable to the General Contractor, Architect and the Owner. The Electrical Contractor shall provide adequate general lighting and general power outlets for all contractors for the proper conduct of their work to the satisfaction of the Architect.
   2. Prohibitive Electric:
      a. Electric welders will not be permitted on the project. Portable units must be used.
      b. Electric temporary heaters are not permitted.
      c. Electric construction equipment/tools featuring excessive amperage (>20 amps) shall be fed from Contractor provided generators.
      d. Electric Service to construction trailers will not be available.

e. In all cases the feeds shall not present a hazardous condition to the construction of and/or movement about the Project.

3. If temporary lighting is still in use at the time that finished coats of paint are being applied, then the temporary lighting shall be of the same source, orientation, and foot candle intensity as the final lighting specified for the space (example: T-8 SP35 fluorescent, ceiling mounted, 50 foot candles). This lighting may be provided in a portable fashion in the area being painted and is not necessarily intended to infer that the whole space be filled to such intensities.
4. The Electrical Contractor shall pick up the source of power for the temporary service from existing power sources. Do not overload the existing panels. Provide adequate fuse protection and necessary ground fault protection required by Code. In all cases the feeds shall not present a hazardous condition to the existing building. The temporary power shall be sized appropriately for the loads served.
5. Any Contractor requiring special power, other than that furnished, shall be responsible for providing the necessary source or means of providing said power and shall provide feeder from same with protection. All costs pertaining to special power service shall be borne by that Contractor.
6. The Owner will pay the cost of all electrical energy used on distribution lines (permanent and/or temporary) installed by the Electrical Contractor until the Project is accepted by the Owner. The Electrical Contractor shall provide and pay for all materials, maintenance, servicing, operation and supervision of the service and distribution facilities (permanent and/or temporary). The Electrical Contractor shall maintain service at all times.
   a. Contractors shall be responsible to turn off lights, etc., each night and on weekends/holidays.
7. When the temporary electrical lines are no longer required they shall be removed by the Electrical Contractor, who shall restore to their original condition any part, or parts of the ground or building disturbed or damaged. All material associated with temporary power distribution facilities not required for the permanent service shall become the property of the Electrical Contractor.

C. Temporary Heat
1. The HVAC Contractor shall maintain heat in the existing building at a minimum temperature of 70˚ F. at all times either by means of the existing heating system, temporary heating equipment or by means of the new permanent system, whichever is appropriate.
   a. The HVAC Contractor shall maintain ventilation in the existing building at all times.
   b. The General Contractor shall provide the necessary equipment to properly ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
   c. Also see Paragraph 1.03 Temporary Ventilation.
2. Prohibitive temporary heat:
   a. The use of electric temporary heaters is strictly prohibited.
   b. Use of open burning type temporary heating units is prohibited.
   c. Provide fire extinguishers during operation of portable heat sources.
3. Note: Permanent HVAC equipment shall not be operated during demolition and until all plastering, parging, sanding, etc., construction in an area is complete and the area cleaned of dust and debris. Permanent mechanical cooling equipment shall not be operated in areas under construction, said equipment shall be operated for check-out and troubleshooting only until commissioning/balancing is complete.
4. If plastering or parging of any surfaces is necessary to enable the HVAC Contractor to install the permanent heating system in a manner to permit its use for supplying temporary heat during the construction period, the plastering or parging of these surfaces shall be done by the General

Contractor sufficiently in advance of the work of the HVAC Contractor so as not to delay the installation of the permanent system. In the event this plastering or parging work is not completed in ample time to make possible the installation of the permanent piping and heating units in a particular area, the HVAC Contractor shall install temporary piping and heating units and cost of such temporary installation shall be paid by the General Contractor.

5. The Owner will pay for all water, electricity and fuel required for the operation of the permanent heating system (existing and/or new).
    a. If portable heating units are used, the HVAC Contractor shall supply and pay for fuel used in these units.

D. Maintaining Existing Systems
1. Existing systems which remain in use, as well as, new systems installed and activated during the construction work, shall be maintained by the Contractor, i.e. HVAC systems; Plumbing systems; and Power, Lighting, Fire Alarm, Sound, etc., systems. Damage to these systems caused by work under this contract shall be repaired at the Contractor's expense.
2. Advance notification shall be given the Architect and Owner when any shut-offs or shut-downs of the building systems are scheduled. Advance notification time frames shall be as specified in the mechanical and electrical technical specifications.

1.13 STAGING AREAS

A. Use only designated construction access roads for construction traffic. Coordinate any possible access restrictions to the site with local city, town, and/or borough requirements.

B. The location of the construction staging/parking area shall be coordinated with the Owner and the Architect.

C. All existing walks and roads on and/or adjacent to the site are to be kept free of soil/debris at all times. The General Contractor shall broom and/or power clean and wash all existing walks and paving soiled from the construction activities. Also refer to Section 017413.23. All trucks leaving the site must remove any soil from wheels before leaving site.

1.14 TRASH

A. The General Contractor shall be responsible for providing trash collection facilities for the project, including other Prime Contractors, relocating said facilities as necessary during Project construction, and removing said facilities at Project completion. The trash from the work of the other Prime Contractors that the General Contractor will provide collection for shall be defined as normal construction debris throughout the work area, i.e. cardboard, crating, metal bands, dirt, paper, etc. Equipment and system items, i.e. boilers, unit ventilators, piping, ductwork, light fixtures, motors, pumps, etc., shall not be defined as trash. Non-trash items shall be collected and disposed of by the Prime Contractor demolishing or removing them. Other Prime Contractors shall coordinate their specific trash needs with the General Contractor and establish a cost and form of payment plan to the General Contractor for such need.

1. Trash collection facilities shall be located in coordination with Owner.
2. Each Prime Contractor or subcontractor will be responsible to collect and to deposit his debris, garbage, litter, rubble, and rubbish in such collection facilities daily.
    a. Contractors shall dismantle crates, crush cardboard boxes, and otherwise attempt to compact all such trash deposited in these collection facilities.
3. Each Prime Contractor will be responsible for the overall cleanliness of the entire jobsite, as specified in Section 017413.23. Those Prime Contractors who do not comply with the overall

procedures and standards shall be reported to the Owner for possible reduction of their Contract Sum.
4. Trash, dust, and dirt of any kind shall not be allowed to accumulate.
5. Contractors shall collect and remove their own liquid waste from the jobsite.
6. No burning of trash, debris, and rubbish is allowed.

B. The Prime Contractor responsible for the cutting and patching demolition work is responsible to collect and deposit the demolition debris, trash, dirt, scrap, rubbish, and dust created by that demolition work in trash collection facilities.

C. The General Contractor shall remove trash collection facilities as required as the project progresses and restore said areas to their original condition, as good or better.

D. Disposal of all waste materials and/or rubbish shall be in compliance with County and State solid waste laws.

1.15 SNOW REMOVAL

A. The General Contractor shall provide snow removal from all site construction areas, the construction staging/parking area to the building construction areas, as well as within the construction and staging/parking areas, as necessary to maintain access and safe working conditions and as required to ensure project completion dates.

B. Each Prime Contractor shall remove all snow accumulations from their excavation areas.

1.16 FIRE PROTECTION

A. The General Contractor will provide general temporary fire protection requirements.
1. Other Prime Contractors and subcontractors will be responsible for their own specialty requirements (such as cutting, welding, burning).
2. All Prime Contractors shall review their fire protection plan with the Local Municipality's Fire Chief before commencing work.

B. The General Contractor shall provide and maintain fire extinguishers in all construction areas.

1.17 PROJECT INFORMATION SIGNS

A. The General Contractor shall provide construction signs as required by law, including:
1. Bulletin boards with protective covers to post safety and code notices, prevailing wage act, OSHA signs, etc., for use by all Prime Contractors.
2. Project funding sign as specified in Section 002000.

1.18 FIELD OFFICES AND SHEDS

A. Contractors may provide their own field office and/or storage shed as required by their needs, if space Is available on site and the Contractor receives the Owner's permission, also refer to Section 011000, only one trailer will be permitted per Contractor. If the Contractor requires any power and/or phone connections to his field office, said Contractor shall arrange for same, at the Owner's approval, and pay all costs associated to said connections as well as all utility usage and service costs. The Contractor shall remove

his trailer, shed, and any temporary utility service when they are no longer required and restore said area to original or better condition.

1. Each Prime Contractor is required to provide his field superintendent with a means to be contacted by the Owner, Owner's Representative (Clerk of the Works), and/or Architect.
2. Contractor's identification sign may be posted on their field office. No other sign, billboard, or advertisement is permitted by any Contractor.

1.19 PREVENTION OF DUST / DIRT ACCUMULATION

A. During construction and/or demolition operations, take necessary precautions/measures to prevent dust or dirt from rising and avoid dust, dirt and debris entering surrounding areas, classrooms, and/or buildings. The following non-all-inclusive list of recommendations is provided to aid in the reduction of construction dust/debris exposure:

1. Wet wipe, and/or use a HEPA filtered vacuum, clean all surfaces in occupied areas.
2. Isolate work areas by sealing doorways (not intended for emergency evacuation exits) with 6 mil polyethylene sheeting.
3. Separate air plenum of work areas from occupied areas; seal with polyethylene sheeting or fiberglass batting.
4. Ventilate work areas using fans to create negative pressure zone exhausting air out of the building; operate fans continuously. See also Paragraph 1.03.
5. While work is being performed, lightly mist with water to aid in controlling dust in the interior work area. Do not water damage construction/materials to remain.
6. Use water saws, not dry saws, to cut concrete, masonry, tile, etc.
7. Place a series of flaps at doorways between work areas and occupied areas.
8. Install carbon monoxide alarms set to 10ppm in work areas utilizing combustion operated equipment. Stop work, if the alarm deploys.

1.20 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Each Prime Contractor performing site excavation work, shall comply with the soil erosion control plan as indicated on drawings, as well as all laws, regulations and guidelines regarding soil erosion control at all disturbed areas under each respective Contract.

1.21 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Each Prime Contractor shall remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Final Completion and Final Application for Payment inspection.

B. Clean and repair damage caused by installation or use of temporary work. Restore facilities used during construction to original or better condition.

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Standard of Quality

B. Products.

C. Transportation and Handling.

D. Storage and Protection.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include Division 00 and other Sections of Division 01 of these Specifications.

1.03 STANDARD OF QUALITY

A. The various materials and products specified in the Specifications by name or description are given to establish standards of quality and of cost for bid purposes. It is not the intent to limit the bidder, the bid or the evaluation of the bid to any one material or product specified, but rather to describe the minimum standard that is desired and acceptable. A material or product of lesser quality would not be acceptable. Where proprietary names are used as requested by the Owner, substitutions will not be acceptable. Proprietary shall be defined by specifying one manufacturer with no opportunity for substitutions of other manufacturers. A bid containing an alternative which does not meet the specifications may be declared non-responsive. A bid containing an alternative may be accepted but, if an award is made to that bidder, the bidder will be required to replace any alternatives which do not meet the specifications.

1. Materials and products/equipment provided under the Contract shall be new and undamaged, unless specifically specified as salvaged/refurbished/etc.

B. The burden is upon the Bidder to prove such equality. If the Bidder elects to prove such equality, the Bidder must request the Architect's approval in writing to substitute such item(s) for the specified item(s), along with supporting data, and samples, if required, to permit a fair evaluation of the proposed substitution with respect to quality, serviceability, appearance and warranty.

1. Substitution requests shall be submitted according to Section 012513 “Product Substitution Procedures”.

C. The Contractor shall furnish and install construction materials and products in accordance with the Contract Documents and the accessibility provisions of the 2021 International Codes issued by the International Code Council (ICC), including accessibility provisions in Chapter 11 and Appendix E, ANSI A117.1.

1.04 PRODUCTS

A. Products: Means raw material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection

of the Work. Products may also include existing materials or components required for reuse, if so specified.

B. Material and Equipment incorporated into the work shall:
   1. Conform to applicable specifications and standards.
   2. Comply with size, make, type and quality specified, or as specifically approved in writing by the Architect/Engineer.
   3. Manufactured and Fabricated Products:
      a) Design, fabricate and assemble in accord with the best engineering and shop practices.
      b) Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.
      c) Two (2) or more items of the same kind shall be identical, by the same manufacturer.
      d) Products shall be suitable for service conditions.
      e) Equipment capacities, sizes and dimensions shown, or specified, shall be adhered to unless variations are specifically approved in writing.
   4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

C. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

D. Provide interchangeable components of the same manufacturer, for similar components.

E. Reference to known ASTM and Federal Standard Specifications shall mean and intend latest edition to such specifications adopted and published to date of Notice to Bidders.

1.05 TRANSPORTATION AND HANDLING

A. Arrange deliveries of products in accord with project construction schedules.

B. Transport and handle products in accord with manufacturer's instructions.

C. Promptly inspect shipments to assure that products comply with requirements, are in manufacturer's original containers with identifying labels intact, quantities are correct, and products are undamaged.

D. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.06 STORAGE AND PROTECTION

A. Store and protect products in accord with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weathertight, climate controlled enclosures.
   1. Prefinished materials shall arrive at job site in their original unopened cartons or other protective packaging necessary to protect finishes. Materials should be stored in such packages until time of application.
   2. Flat materials such as panels shall arrive and remain on adequate support to ensure flatness and prevent damage.
   3. Store all materials, equipment and bulk items prior to installation in clean, dry, well ventilated locations away from uncured concrete, masonry or damage of any kind. Where materials are approved for exterior storage, waterproof tarpaulin or polyethylene sheeting must allow for air circulation under covering.

B. For exterior storage of exterior materials/products:
   1. Provide substantial sloped platforms, blocking or skids to support fabricated products above ground, prevent soiling, or staining.
   2. Store loose granular materials on solid surfaces in a well-drained area, provide plywood or sheet materials to prevent mixing with foreign matter.
      a) Provide surface drainage to prevent flow or ponding of rainwater.
      b) Prevent mixing with foreign matter, refuse, chemically injurious materials, or liquids.
   3. Cover products subject to discoloration, or deterioration, from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.

C. Store all interior fixtures, equipment, materials, casework, furniture, etc., items in weathertight, climate controlled enclosures.

D. Provide off-site storage and protection when site does not permit on-site storage or protection.

E. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

F. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

G. Refer to Technical Specifications for additional storage and protection requirements.

1.07 INSPECTION AND MAINTENANCE STORED PRODUCTS

A. Maintain periodic system of inspection of stored products on scheduled basis to assure that:
   1. State of storage facilities is adequate to provide required conditions.
   2. Required environmental conditions are maintained on a continuing basis.
   3. Surfaces of product exposed to elements are not adversely affected.
      a) Any weathering of products, coatings, and finishes is not acceptable under requirements of Contract Documents.

END OF SECTION 016000

SECTION 017413.23 - PROGRESS AND FINAL CLEANING

PART 1 GENERAL

1.01 SCOPE

A. Work included: Throughout the construction period, maintain the building and site in a standard of cleanliness as described in this section.

1.02 RELATED WORK IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. In addition to standards described in this Section, comply with requirements for cleaning as described in Technical Specification Sections.

1.03 STANDARD OF QUALITY

A. Conduct daily inspection to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment and materials needed to maintain the specified standard of cleanliness.

B. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

2.02 COMPATIBILITY

A. Use only those cleaning materials and equipment which are compatible with the surface being cleaned.

B. Use only those cleaning materials and methods recommended by manufacturers of the surface being cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

D. All cleaning materials and equipment shall be used according to the manufacturer's printed recommendations.

2.03 TRASH

A. Trash collection facilities shall be provided as specified in Section 015000.

PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. General:
1. Weekly cleanups, as hereinafter specified, shall be manned by a minimum of one representative of each separate Prime Contractor, regardless of whose construction activity has resulted in the accumulation of debris. Failure by the Contractor to provide such manpower shall result in the Architect withholding monies from that Contractor's Monthly Application for Payment and/or withholding certification of the entire monthly application for payment.
2. Each Prime Contractor shall provide storage of their materials. No storage or staging of materials shall be permitted within the building or on the roof. Space for storage or staging of materials on site is limited. Contractors shall review their site staging area and material storage needs with the General Contractor and Owner; material that cannot be stored on site shall be stored off-site by the appropriate Contractor.
3. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
4. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this work.
5. At least twice each month, and more often, if necessary, completely remove all scrap, debris, and waste material from the job site.
6. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the environment.

B. Site:
1. Daily, inspect the site and pick up all scrap, debris and waste material. Remove such items to the place designated for their storage.
2. Weekly, and more often, if necessary, inspect all arrangements of materials stored on the site. Restack, tidy or otherwise service arrangements to meet the requirements of sub-paragraph 3.01 A.1 above.
3. Maintain the site in a neat and orderly condition at all times.
4. The General Contractor shall broom and/or power wash clean all existing walks and paving soiled from construction activities on a regular basis.

C. Structures:
1. Daily, inspect the structures and pick up all scrap, debris, and waste material. Remove such items to the place designated for their storage or disposal.
2. Daily, and more often, if necessary, sweep interior spaces clean.
   a. "Clean," for the purpose of this sub-paragraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a mop.
3. As required preparatory to installing succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.
4. Floor protective coverings shall be installed by the General Contractor over new finish flooring installed under the General Contract. Floor protective coverings as specified shall be maintained in good condition until final acceptance by the Owner and Architect.
   a. Protective floor covering shall be cleaned daily (and more often if necessary) at all times while work is being performed in the space in which finish materials are installed.
   b. "Clean," for the purpose of this sub-paragraph, shall be interpreted as meaning free from

foreign materials which, in the opinion of the Architect, may be injurious to the finish floor material.

3.02 FINAL CLEANING

A. Final cleaning shall be executed prior to the request for final inspection per final completion.

B. "Clean", for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by professional skilled cleaners using commercial quality building maintenance equipment and materials.

C. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste.

D. Site (Work by General Contractor):
1. Remove temporary protection and facilities installed for protection of the work during construction.
2. Broom and/or power wash clean paved/surfaced areas on the site and public paved/surfaced areas adjacent to the site. Remove stains, spills or other foreign deposits.
3. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances.
4. Completely remove resultant debris.

E. Structures:
1. General Contractor shall employ a professional cleaning firm for final cleaning of interior spaces and interior/exterior window/door cleaning. Cleaning firm shall have five years documented experience and satisfactory work as indicated in submittal to the Architect/Engineer. Clean each surface until the condition expected in a normal institutional building cleaning and maintenance program is reached.
2. Exterior:
   a. Visually inspect exterior surfaces including doors and windows and remove all traces of soil, waste materials, smudges and other foreign matter.
   b. Remove all traces of splashed materials from adjacent surfaces.
   c. Clean debris from roofs, gutters, downspouts, and drainage systems.
3. Interior:
   a. Visually inspect interior surfaces, including doors, windows and glass (inside and outside), equipment, etc. and remove all traces of soil, dust, waste materials, smudges and other foreign matter.
   b. Remove all traces of splashed material from adjacent surfaces.
   c. Remove paint droppings, spots, stains, and dirt from finished surfaces.
   d. Remove specified finish flooring protection and mop hard floor surfaces or vacuum carpeted areas.
   e. Remove labels that are not permanent labels (each appropriate prime contractor shall remove labels from equipment/products installed under their contract).
   f. Clean transparent materials, including mirrors and glass, in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
   g. Wipe surfaces of mechanical and electrical equipment. Clean plumbing fixtures to a sanitary condition.
   h. Remove excess lubrication and other substances (each appropriate prime contractor shall

remove excess lubrication from equipment/products installed under their contract).

i. Electrical Contractor shall clean light fixtures and lamps.

F. Ventilating System (Work by HVAC Contractor):

1. Replace permanent filters of ventilation equipment when construction is complete; in addition, clean ducts, blowers and coils. Adjust operating products and equipment to ensure smooth and unhindered operation.

G. Refer to Technical Specification Sections of each Prime Contract for additional cleaning requirements.

H. Schedule final cleaning as approved by the Architect to enable the Owner to accept completely clean work.

3.03 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Contractor re-enter an area to work after the Owner has occupied the area, then the Contractor shall be responsible for all interim and final cleaning required from the work undertaken.

END OF SECTION 017413.23

SECTION 017700 - PROJECT CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SCOPE

A. In general, the Contractor shall submit written certification that Contract Documents have been reviewed, that the Work has been inspected and completed in accord with the Contract Documents and is ready for review by the Architect/Engineer, for Substantial as well as Final Completion.

B. When the Architect finds the work acceptable under the Contract Documents, the Architect will request the Contractor make closeout submittals, including but not limited to the following:

1. Evidence of compliance with requirements of governing authorities.
2. Project Record Documents (As-Built Drawings)
3. Warranties
4. Operation and Maintenance Manuals
5. Extra Stock Materials
6. Closeout Affidavits
7. Final payment application and adjustment of Contract Sum

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include, but are not necessarily limited to: All Sections in Division 00 and all other Sections of Division 01 of these Specifications.

B. Technical Specifications

1.03 CLOSEOUT PROCEDURES

A. The following closeout procedures apply per Project Phase as well as Final Project Completion. All notices, certifications, submittals, requests, etc., shall be addressed to the Architect/Engineer. Failure by the Contractor to complete the work and/or furnish submittals by the dates specified shall result in the liquidated damages as specified in Section 002000 “Instructions to Bidders” being deducted from the Contract Sum for each and every calendar day's delay.

B. Substantial Completion: Shall be as specified in Section 007216 - General Conditions, Article 9.8, and generalized as follows:

1. When the Contractor considers the work, or designated portion thereof, to be substantially complete in order to accommodate Owner occupancy, he shall submit written notice of same and attach a comprehensive list of items yet to be completed and/or corrected.
2. Upon receipt of such notice, the Architect/Engineer will make an inspection to determine the status of completion.
3. Should the Architect/Engineer determine that the work is not substantially complete:
   a. He will promptly notify the Contractor, in writing, giving the reasons, therefore.
   b. Contractor shall remedy the deficiencies in the work and send a second written notice of substantial completion.
   c. The Architect/Engineer will reinspect the work.
4. When the Architect/Engineer determines that the work is substantially complete, the

Architect/Engineer will:

a. Prepare a Certificate of Substantial Completion (A.I.A. Form G704) accompanied by Contractor's list of items to be completed or corrected within 30 days of the date of Substantial Completion, as verified and amended by the Architect/Engineer.
b. Submit the Certificate to Owner and Contractor for their written acceptance of the responsibilities assigned to them in Certificate.

C. Final Completion: Shall be as specified in Section 007216 - General Conditions, Article 9.10, and generalized as follows:

1. When the Contractor considers the work complete, he shall submit written certification that:
   a. Contract Documents have been reviewed.
   b. Work has been inspected and completed in accordance with the Contract Documents.
   c. Equipment and systems have been tested and operated in the presence of the Owner's Representative. For equipment requiring seasonal operation, perform instructions for other seasons within six (6) months.
   d. Operating products and equipment have been adjusted to ensure smooth and unhindered operation.
   e. Instruct Owner’s Representative on maintenance of products, equipment, or systems. Use initial operation and maintenance manuals as hereafter specified as basis for instruction.
      1) Submit evidence that applicable operating instructions/demonstration have been given to Owner's personnel, refer to Paragraph 1.05.
   f. Initial Operation and Maintenance Manuals that include Air and Water Balance Reports, Valve Tag Charts, and Panel Directories where required.
   g. Work has received final cleaning according to Section 017413.23.
   h. Work is completed and ready for final review.
   i. Request the Architect/Engineer make a review to verify the status of completion with reasonable promptness after receipt of such request.
2. Should the Architect/Engineer consider that the work is incomplete or defective:
   a. The Architect will promptly notify the Contractor in writing, listing the incomplete or defective work.
   b. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to Architect that work is complete. All outstanding work shall be completed or corrected within 30 days of the date of the final punchlist issued by the Architect.
   c. The Architect/Engineer will again review the work.
3. When the Architect/Engineer finds that the work is acceptable under the Contract Documents, the Architect shall request the Contractor to make closeout submittals as follows.

D. Should the Architect perform more than one review to those listed above due to failure of the work to comply with the claims of status of completion made by the Contractor:

1. The Owner will compensate the Architect for such additional services.
2. The Owner will deduct the amount of such compensation from the final payment to the Contractor.

E. Following Substantial and/or Final Completion, in the event the Contractor fails to complete the list of items of the outstanding work instructed by the Architect to be corrected or completed within 30 days after the Substantial Completion Date and/or within 30 days of the final punchlist issued by the Architect, the Owner may (I) exercise any available remedies to correct or complete deficient work or retain a third party to correct or complete such work at the cost of the defaulting contractor, and (II) retain and deduct from any payments or retention otherwise due to the defaulting contractor any fees and expenses for

services required to be provided by the Architect more than 30 days after the specified completion date(s).

1.04 CONTRACTOR'S CLOSEOUT SUBMITTALS

A. When the Architect/Engineer receives written certification from the Contractor that final Punchlist(s) have been completed and the Architect finds that the Contractor's certification of final completion is acceptable under the Contract Documents, the Architect shall request the Contractor to make closeout submittals. All submittals shall be addressed to the Architect/Engineer, unless otherwise specified, and shall be accompanied with transmittal containing project number, title, and Contractor's name. Closeout Submittals shall be as specified in Section 007216 - General Conditions, Article 9.10.5, and as follows:

B. Submit evidence of compliance with requirements of governing authorities:
   1. Certificate of Occupancy.
      a. The Owner's receipt of an Occupancy Permit does not constitute "Completion" of the work by the Contractor. To reach "Completion", the Project must have all work completed as specified in Section 007216 - General Conditions, Article 9.8.1.1.
   2. Certificates of Inspections and/or Operating Certificates where required, including, but not limited to:
      a. Plumbing Utilities (Fire Protection, Sanitary, Water, Gas, etc.)
      b. HVAC Systems
      c. Electrical inspections
      d. Fire Marshall
   3. Compilations of On-site Construction Testing (as required by Specifications and/or IBC), including, but not limited to:
      a. Concrete
      b. Earthwork/foundations
   4. Verification of Final Adjustment of Door Hardware
   5. Inspections and/or Testing Reports shall also be submitted in electronic PDF files, formatted and bound to read/reprint the same as the hard copy.

C. Submit final bound and indexed Operation and Maintenance Manuals, including all extended Warranties and/or Guarantees issued by Contractors and/or manufacturers; manuals shall be assembled according to requirements of Paragraph 1.06. Manuals shall also be submitted in electronic PDF files, formatted and bound to read/reprint the same as the hard copy.
   1. Note: Warranties required by the Contract Documents shall commence on the date of Final Payment of the Entire Project, unless otherwise specified in Section 007216 - General Conditions, Article 9.8.4.
   2. Provide Owner with another, separate Warranty Manual for Owner's quick reference.

D. Submit Record Documents incorporating As-Built Revisions to drawings and/or specifications, including change orders, according to requirements of Paragraph 1.07. Record Documents shall also be submitted in electronic PDF files, formatted and bound to read/reprint the same as the hard copy.

E. Where surplus materials, scraps, extra stock materials, spare parts and/or maintenance materials are specified to be delivered to the Owner, submit evidence that same has been turned over.
   1. Additional material to be furnished to the Owner under the General Contract shall include but not be limited to:
      a. Tile – Section 093000.
      b. Ceiling panels – Section 095100
      c. Resilient flooring – Section 096500

2. Refer to Technical Specifications for additional items under each Contract.

F. General Contractor shall submit Keys and Keying Schedules according to requirements of Section 087100 “Hardware”.

G. Submit Final Payroll Certifications to the Owner (Forms satisfactory to Pennsylvania Department of Labor and Industry and as included in Section 007216). Submit statement that Owner has received Final Payroll Certifications. Refer to Section 007216 for weekly payroll/certification submittals.

H. Submit Contractor's Affidavit of Payment of Debts and Claims, A.I.A. Document G706.

I. Submit Contractor's Affidavit of Release of Liens, A.I.A. Document G706A.

J. Submit Consent of Surety Company to Final Payment, A.I.A. Document G707, with effectively dated powers of attorney attached.

K. Submit Application and Certification for Final Payment, A.I.A. Documents G702 and G703, according to requirements of Paragraph 1.08.

L. Certified letter stating that no Hazardous Materials have been installed on the Project as specified in Section 007216 - General Conditions, Article 10.1.5.

1.05 INSTRUCTIONS/DEMONSTRATIONS TO OPERATING PERSONNEL

A. Use initial operation and maintenance manuals as basis for instruction of products, equipment and systems to Owner’s Representative. Review contents of manual with Owner’s Representative in detail to explain all aspects of operation and maintenance. Prepare and insert additional data in final manuals for submission when need for such data becomes apparent during instruction.

B. Contractor shall coordinate with the Owner and Architect/Engineer regarding time and attendance for instructions/demonstrations. Contractor shall document all instructions/demonstrations to the Owner, submit copy of same to the Architect following instructions/demonstrations, and include copy of same in final submittals of Operation and Maintenance Manuals. Documentation shall include the following:

1. Date of Instruction/Demonstration
2. Names of Owner’s representatives in attendance and their signatures
3. Name of manufacturer’s representative presenting instructions/demonstrations
4. Name of Contractor’s representative in attendance
5. Name of Architect/Engineer’s representative in attendance, if applicable

C. Time of Instructions/Demonstrations shall not be time of testing, cleaning, or adjusting. Refer to Technical Specifications of each Contract for required instructions/demonstrations.

1. Instructions/Demonstrations to be given to the Owner’s representative under the General Contract shall include but not be limited to:
   a. Electronic hardware – Section 087100
   b. Finish Flooring – Section 096500
   c. Window Shades – Section 122400
2. Instructions/Demonstrations to be given to the Owner’s representative under the HVAC Contract shall include but not be limited to:
   a. Instrumentation and Controls (ATC/BMS)

3. Instructions/Demonstrations to be given to the Owner's representative under the Electrical Contract shall include but not be limited to:
    a. Lighting Systems & Lighting Controls

1.06 OPERATION AND MAINTENANCE (O & M) MANUALS

A. Each Prime Contractor shall prepare operation and maintenance data for building products, applied materials and/or finishes, equipment, and systems, for work under their Contract, in the form of an instructional Operation and Maintenance (O & M) Manual, with corresponding Warranties, for submission to the Architect/Engineer, as required by their Technical Specifications, and as specified hereafter.

1. Individual submittals of maintenance instruction sheets, warranties, etc., included with shop drawing submittals will only be accepted as example copies, not as final close out submittals.
2. Written Care (Operation) and Maintenance Manuals, with Warranties, required to be submitted by the General Contractor may be one comprehensive manual for the entire General Contract with all data included under separate tabs, or separate manual submissions grouped according to Specification Division (i.e., all Division 07 Roofing/Accessories/Warranties submitted in one binder and all Division 09 Finishes/Warranties submitted in another). At a minimum, the following work under the General Contract requires submission of written Care (Operation) and Maintenance Manuals:
    a. Hardware – Section 087100
    b. Finish Flooring – Section 096500
3. Where warranties are required by Technical Specifications without the submittal of O & M Manuals, these warranties may be included in the comprehensive O & M manual, and must be included in the separate "Warranty Manual", formatted similar to the O & M Manual.

B. Use initial Operation and Maintenance Manuals as basis for instruction of products, equipment and systems to Owner's Representative as specified in Paragraph 1.05.

1. Submit two (2) sets of initial manuals, unless otherwise specified. For equipment, or component parts of equipment put into service during progress of construction and operated by Owner, submit documents per Phase.
    a. One (1) copy will be returned after final inspection, with the Architect/Engineers' comments. Revise content of documents as required prior to final submittal.
2. Submit three (3) copies of revised volumes of data in final form. Final manuals shall be submitted to the Architect prior to Contractor's request for Final Payment. The Architect will forward all copies of the final O & M Manuals to the Owner.
3. Manuals shall also be submitted in electronic PDF files, formatted and bound to read/reprint the same as the hard copy.

C. Manuals shall be formatted as follows:

1. Bound in heavy-duty vinyl, 8-1/2" x 11" text page three-ring binders, 2" maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
2. Prepare binder covers with typed or printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, subject matter of contents, and volume number when multiple binders are required.
3. Internally subdivide the binder contents with tabbed fly leafs with tab titling clearly typed or printed under reinforced laminated plastic tabs for each subdivision. Include a Table of Contents for each volume. Logically organize data, subdivided by specification section, and include the following:
    a. Directory listing names, addresses, and telephone numbers of Architect/Engineer, Prime Contractor, and subcontractor(s) and major equipment supplier(s) for each product or

system. Include telephone numbers for both regular day service and night emergency service.

b. Operation and maintenance instructions by the manufacturer. Identify the following:
   1) Operating instructions for equipment and systems.
      a) Include description of unit or system, and component parts. Identify function, normal operating characteristics and limitations, performance curves, engineering data and tests, complete nomenclature, commercial numbers of replaceable parts, and wiring and flow diagrams.
      b) Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications. Include color coded wiring diagrams as installed.
      c) Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and any special operating instructions. Include sequence of operation by controls manufacturer.
      d) Local source of supplies and replacement parts
   2) Maintenance instructions for equipment and systems. Include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions. Provide servicing and lubrication schedule, and list of lubricants required.
   3) Maintenance instructions for all finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

c. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
   1) Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
   2) Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams (by controls manufacturer as installed). Do not use Project Record Documents as maintenance drawings. Fold larger drawings to size of text pages. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

d. Provide charts (index) of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

e. Where the HVAC Contractor is responsible for Testing and Balancing, include test and balancing reports (air and water). Minimum of three (3) copies of reports shall be submitted for initial review.

f. Certificates.

g. Refer to Technical Specifications of equipment and systems for additional data that may be required to be included in the operation and maintenance manual.

h. Warranties / Guarantees. (Provide Owner with another, separate Warranty Manual for quick reference, as well as, including warranties in the Operation and Maintenance Manual).
   1) Provide notarized warranties/guarantees, clearly labeled
   2) Provide the name, address and name of manufacturer, length of warranty period, how to file claim, name, address and telephone number of Contractor.
   3) Date warranties begin will be date of Final Payment to the Contractor.
   4) Extended Warranties/Guarantees to be furnished to the Owner under the General Contract shall include but not be limited to:
      a) Section 072100 Rigid Building Insulations - fifteen year Thermal Resistance
      b) Section 073100 Shingles - Specified warranty plus 2 year installer warranty
      c) Section 076200 Sheet Metal Flashing - Specified warranties plus 2 year installer warranty

d) Section 079200 Caulking – 5 year guarantee
e) Section 084113 Aluminum Window Frames – 2 year products; 10 year finish & thermal barrier
f) Section 087100 Door Hardware: Warranties as specified and/or manufacturer's standards
g) Section 088000 Glass – 10 year insulated
h) Section 089000 Louvers – 10 years
i) Section 093000 Tile Floors – 10 years
j) Section 095100 Lay-in Ceilings – 30 years
k) Section 096500:
Rubber Base - 2 years
VCT – 5 years
l) Section 100000 Corner Guards – 5 years
m) Section 102813 Mirrors – 15 years
n) Section 107316 Canopies – 10 Years Panels; 5 Years Aluminum Finish
o) Section 122400 Window Shades – 25 Years
p) Section 123216 Plastic Laminate Casework – 5 years

5) Extended Warranties/Guarantees to be furnished to the Owner under the Mechanical and/or Electrical Contracts shall include but not be limited to:
   a) HVAC Construction:
      i. Compressors – 5 years
      ii. Boiler – 10 years
      iii. ATC / BMS (controls) – 2 years
      iv. Pumps – 3 years
      v. Fabric Ductwork – 20 years
      vi. AHUs – 3 years
   b) Electrical Construction:
      i. Light Fixtures & Controls – 5 years
6) Extended Warranties/Guarantees shall include parts and labor.

1.07 PROJECT RECORD DOCUMENTS

A. As specified in Section 007216 - General Conditions, Article 3.11, Contractors shall maintain on-site, one set of the following Record Documents (for their Contract) for the Owner's records. Clearly label each document "Project Record" and 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 and Product Data. (Note maintain two sets for the Owner as required in Section 007216 - General Conditions, Article 3.)
6. Record documents shall be kept clean, neat, and undamaged for submittal.
7. In addition to submittal of "hard" copies of all documents, Contractor shall submit "flash drive" of scanned .pdf's of all marked up documents.
8. Above submittals ARE NOT to be included in Operation and Maintenance Manuals or Warranty Manuals.

B. Store Record Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record, at each product section, changes made by Addenda, modifications and/or selected alternate bids, as well as, changes made by product substitutions through Change Orders.

E. Reviewed Shop Drawings and Product Data: Clearly indicate the specified Product Section of each to record the actual manufacturer/product installed for each Specification Section/Item.

F. Record Drawings (As-Builts): Legibly mark one set of Contract Drawings to record actual construction including but not limited to:

1. The General Contractor shall submit as-built site plan/storm water drawings, complete with signed and sealed locations/elevations/contours as specified in Sections 312000 and 334000.
2. Measured depths of foundations in relation to finish first floor datum.
3. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
5. Field changes of dimension and detail.
6. Details not on original Contract Drawings.
7. Also refer to mechanical/electrical technical specifications for additional As-Built Drawing requirements.

G. Record Drawings (As-Builts) shall be submitted to the Architect/Engineer for review. The Architect will forward reviewed Record Drawings (As-Builts) to the Owner. Contractors shall submit one (1) set of above remaining Record Documents to the Owner and submit evidence to the Architect that said Record Documents have been given to Owner's personnel.

1. Record Documents shall also be submitted in electronic PDF files, formatted and bound to read/reprint the same as the hard copy.

1.08 FINAL ADJUSTMENT OF ACCOUNTS AND FINAL APPLICATION FOR PAYMENT

A. Submit Final Application for Payment reflecting the following:

1. The original Contract Sum.
2. Adjustments to the Contract Sum by way of additions and deductions resulting from:
    a. Previous Change Orders.
    b. Deductions for Owner’s acceptance of nonconforming work.
    c. Deductions for penalties.
    d. Deductions for liquidated damages.
    e. Deductions for reinspection payments.
    f. Other adjustments.
3. Total Contract Sum, as adjusted.
4. Previous Payments.
5. Sum remaining due.

B. The Architect shall prepare a Change Order, reflecting final adjustments to the Contract Sum which were not previously made by Change Orders, including but not limited to:

1. Deductions for Owner’s acceptance of nonconforming work.
2. Deductions for penalties.
3. Deductions for liquidated damages.
4. Deductions for reinspection payments.

5. Deductions for unit price work not required (refer to Bid Form Section 004116).
6. Other adjustments.

C. Final payment shall be made to the Contractor in accordance with the Architect's review of all submittals as previously specified herein and Section 007216 - General Conditions, Article 9.10.

END OF SECTION 017700

SECTION 024200 - DEMOLITION AND SALVAGE MATERIALS

PART 1 GENERAL

1.01 SCOPE

A. The Contractor shall provide all items, articles, materials, equipment, operations, or methods listed, mentioned, or scheduled on the Drawings and/or herein specified, including all labor and incidentals necessary and required to complete demolition work. The demolition work consists of, but is not necessarily limited to the following:

1. Protecting all trees, monuments, benchmarks and natural features of site areas designated to remain undamaged.
2. Protecting all existing building features and finishes designated to remain.
3. Certain existing materials may require removal and salvaging for re-installation. Refer to Paragraph 3.02.E for protection of materials. Materials removed and salvaged for reuse in the alteration work shall include but not limited to the following:
   a. Face Brick & Glazed Face Brick
4. Materials removed but not salvaged for reuse may remain the property of the Owner - the Owner reserves first right of refusal of all material, equipment, piping and/or fixtures. Contractor shall review all salvageable items with Owner prior to start of demolition work. Owner will instruct Contractor where selected items are to be delivered for storage on-site. All unselected items shall be disposed of by the Contractor off the site.
5. Removal of all materials as indicated on drawings.
6. Remove all rubbish, trash, junk, demolition/construction debris, etc., from the site. Do not bury or burn on site.

1.02 RELATED WORK IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Division 00 and Division 01 of these Specifications.

B. Technical specifications.

1.03 REGULATIONS

A. The Pennsylvania Department of Environmental Protection shall be notified a minimum of ten (10) days prior to start of any demolition work, even if no asbestos is present. The General Contractor shall submit said notification and pay the applicable fee. Procedures for Notification:

1. Notification may be made online through the DEP's GreenPort website via the “Asbestos Notification System (PA.GOV | Department of Environmental Protection)”.
2. Instructions are also located at DEP eLibrary (pa.gov).
3. The initial notification must include the payment stated in the instructions.
4. The Pennsylvania Department of Environmental Protection (DEP) regulates the removal, collection, transportation, and disposal of ACMs. DEP’s Air Quality Program has adopted and enforces the federal Environmental Protection Agency (EPA) 40 CFR Part 61 Subpart M, the Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) regulations, as amended on November 20, 1990.

B. If a Contractor encounters asbestos-containing materials (ACMs) during the demolition work, the Contractor shall report the condition to the Owner and Architect as specified in Section 007216 General Conditions Article 10.3. The Owner will have any demolition of ACMs removed according to NESHAP regulations. The Owner shall be permitted the time to have the presence of ACMs verified and the removal performed.

C. Obtain required approvals/permits from the appropriate authorities for material disposal off-site. Also see Section 007353.

D. The presence of lead-based paint may exist. Contractors shall perform demolition/renovation work in accordance with OSHA Regulations CFR 1926.62, as specified in Section 007216, Article 10; and per federal and state EPA regulations as follows: US Code of Federal Regulations (CFR) & Environmental Protection Agency's Title 40-Protection of Environment, Part 745-LEAD, requirements for working lead safe.

E. Where existing light fixtures are removed/disposed of by the Electrical Contractor: Fluorescent fixture ballasts or capacitors containing PCB's or other hazardous materials shall be properly disposed of as required by the Pennsylvania Department of Environmental Protection Agency.

1. All removal/demolition/transportation/disposal work of hazardous material shall be in accordance with governing regulations and laws, as well as, contacting landfills regarding procedures for disposal of hazardous materials and abiding by all waste handling requirements and documentation reporting.

F. Obtain required approvals/permits from the appropriate authorities for site work construction activities.

G. Conform to any utility company requirements when site work activities affect utility service.

H. Do not close or obstruct emergency entrances, roadways, fire lanes, sidewalks, or hydrants without approval from the Owner or his representative.

I. The Contractor shall comply at all times with applicable federal, state, and local laws, orders, provisions, and policies governing safety and health, including the Federal Construction Safety Act (Public Law 91-54), Federal Register, Chapter XVII, Part 1926 of Title 29 Code of Federal Regulations, Occupational Safety and Health Regulations for Construction, and subsequent publications updating these regulations.

J. It shall be the Contractor's responsibility to contact utility companies prior to any site construction and/or the establishment of site staging areas, as the locations of utilities shown on the plans are approximate and possibly incomplete.

1. Contractors performing excavation shall comply with Senate Bill 242 - Act 50 of 2017 Underground Utility Line Protection Law AKA PA One Call Law, Amending the act of December 10, 1974 (P.L.852, No.287, aka *PA Act 287 of 1974*).
2. Contractor shall contact Pennsylvania One Call System, call 1-800-242-1776 (PA One-Call) or 8-1-1, at least 3 business days, but not more than 10 business days prior to starting excavation.

1.04 BLASTING

A. No blasting shall be performed on the Project Site.

1.05 SUBMITTALS

A. Pennsylvania Department of Environmental Protection's "Asbestos Abatement and Demolition/Renovation Notification" form as specified in Paragraph 1.03.

B. Contractors shall submit copies of Permit(s) obtained from the PA DEP to conduct waste disposal at approved off-site locations, as specified in Section 007353.

C. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

1.05 STORAGE AND PROTECTION

A. All materials delivered to the site shall be covered with waterproof material, carefully piled off the ground in such manner as to insure proper drainage, ventilation and protection from damage and the weather.

B. All materials removed and salvaged for reinstallation shall be carefully removed so as not to damage the item and stored and covered for protection until such work is reinstalled.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

A. Dimension Lumber:
   1. Blocking and Miscellaneous Framing -
      a. Douglas Fir (WWPA) Std. or Better
      b. Southern Pine (SPIB) Std. or Better
   2. Dimension lumber shall be clearly grade marked.

B. Battens:
   1. Adequate for intended use, minimum 1/4" x 1-1/2".

2.02 ROUGH HARDWARE

A. Provide and set all rough building hardware such as spikes, bolts, nails, lag screws, lagging bolts, and anchors as called for or required to hold woodwork together or to anchor it to other material.

2.03 WEATHER PROTECTION SHEETING

A. Weather Protection Sheeting: Shall be minimum 6 mil woven poly sheeting - reinforced clear plastic. Dura Skrim 2 as manufactured by Raven Industries is acceptable.
   1. Any exterior openings left open overnight shall be enclosed with plywood sheathing and herein specified weather protection sheeting.

PART 3 EXECUTION

3.01 PROCEDURES

A. Before starting demolition:
1. Roofing system to be removed: protect all affected roof drains, etc., as per rules, regulations of authorities having jurisdiction.
2. Site operations: protect all affected storm sewers and underground utility lines as per rules, regulations of authorities having jurisdiction.
3. Building operations: Seal areas of demolition off from remainder of building; protect any existing floor drains in area of demolition, as well as, all HVAC grilles, units, etc.

B. The General Contractor shall remove all existing vegetation (vines, weeds, plants, etc.) from the perimeter of the building as well as the building's façade/envelop.

C. Contractors shall execute demolition work in a manner to ensure the existing building designated to remain, as well as any existing sidewalks, curbs, roadways, etc. designated to remain, against any damages resulting therefrom. If at any time safety of existing building designated to remain and/or roadways appears to be endangered, the Contractor shall cease operations and immediately notify the Architect and Owner, at the same time taking all necessary precautions to support such areas as may be affected. If the Architect and/or Owner considers additional bracing or shoring necessary to safeguard existing structure, the Contractor shall be responsible for installing bracing or shoring at the Contractor's expense.

D. Materials indicated on drawings to be demolished shall be completely removed from the premises unless otherwise directed by Architect and Owner.

E. During demolition operations, take necessary precautions/measures to prevent dust or dirt from rising and avoid dust, dirt and debris entering surrounding buildings. Avoid unnecessary noise.
1. See Also Section 015000.

F. The presence of lead-based paint may exist at the site. Contractors shall perform demolition work in accordance with OSHA Regulations CFR 1926.62, as specified in Section 007216, Article 10; and per federal and state EPA regulations as specified in Paragraph 1.03 above.

3.02 PROTECTION

A. Refer to Section 015000 for Site Fencing and Maintenance and Protection of Traffic requirements by the General Contractor.

B. Contractors shall maintain the existing building in a secure, weathertight condition at all times. Wall/roof openings that are exposed to the outside and unprotected are not acceptable. Construction materials shall be protected during erection to prevent the accumulation of moisture/water/windblown debris within the building construction.
1. Contractors shall provide temporary insulated weathertight closure of all exterior openings.

C. Work within the existing building: Contractors shall be responsible for protecting existing finishes, equipment, etc., designated to remain. Protection shall include but may not be limited to the

following:

1. Protect everything below the ceiling area during overhead work.
2. Cover all equipment, etc., left in place with suitable sheeting protection.
3. Cover walls with suitable means to protect existing finishes.
4. Interior protection and covers shall remain in place during entire period of work.
5. Remove coverings at completion of work. Refer to Section 017413.23 for cleaning required.

D. Contractors shall exercise caution in removing all material so as not to disturb concealed utility lines, electric conduit or structural situations not evident.

E. Existing items noted and/or required to be removed and reinstalled during the construction work shall be carefully removed so as not to damage the item and stored and protected as required until its reinstallation.

F. Repair damage done to Owner's property or any other person or persons property on or off premises by reason of required work. All existing finishes and/or features which are to remain, but are altered, damaged, or exposed due to this construction work shall be repaired to original or better condition.

3.03 REMOVAL OF EXISTING ROOFING SYSTEMS BY THE GENERAL CONTRACTOR

A. All existing roofing and related materials shall be removed from existing roof areas down to the trusses and/or deck as applicable, and surfaces prepared as required to receive the new roofing systems. Certain areas of existing roofing to be removed may consist of multiple layers of existing roof systems; existing roofing systems shall be removed complete down to existing construction as indicated. The existing wood deck at Building 'B' shall be inspected; Areas that appear defective shall be reported immediately to the Architect. The Architect will then determine the amount and type of corrective action to be taken.

1. Should the Architect determine any areas of Building 'B' existing wood deck requires removal, same shall be replaced with plywood as specified in Section 061000.
2. Prior to removal of any existing roof decks for replacement:
   a. Wherever existing roof decks are removed and replaced, all rooftop equipment located on said decks shall be removed, disconnected, re-installed, and re-connected as required.
   b. All existing materials and systems supported from said decks shall be temporarily supported by the Contractor and reinstalled/supported at completion of deck replacement, including but not limited to suspended lay-in ceiling assemblies.

B. Removal of existing roofing materials shall be done in a manner which will preserve the existing roof trusses and/or deck, as applicable, without damage caused by removal of materials.

1. Contractor shall verify electrical conduits and other possible materials (i.e., ceiling fasteners, supports, etc.) that may be fastened to deck below and possibly be damaged by installation of new fasteners and/or require removal and reinstallation during any deck replacement work. Any material altered or damaged due to the work shall be repaired to original or better condition.
2. Removal of existing roofing system(s) shall include cleaning all existing perimeter masonry/stone/concrete areas, flashings, and counterflashings indicated to remain, of all existing asphalt, caulking, mortar, etc., all substrates shall be cleaned as recommended by roofing manufacturer prior to receiving new membrane.

C. No more roofing shall be removed than can be reroofed within the same work period. The Contractor shall provide all necessary protection of the building during removal/replacement of the roofing system

against inclement weather.

1. The Contractor shall be responsible for protecting the interior of the building from rain and debris falling through roof deck during the demolition work and/or through openings during deck replacement, as well as, furnishing and installing all new materials and/or repairing materials and surfaces within the building which become damaged by debris, wind, rain, snow or other such weather related damage during the roofing work.
2. Caution: No storage or staging of construction materials shall be permitted on the roofs. All materials shall be placed to evenly distribute all loads.

3.04 REMOVAL OF EXISTING SITE SURFACES

A. General Contractor shall break up and totally remove existing sidewalks, curbs, paving, and base from areas as shown on drawings to accommodate new construction. Sawcut existing site surfaces to be tied into. Removed materials shall be disposed of off site.

B. Take measures to avoid dust, dirt and debris entering neighboring residences. Avoid unnecessary noise.

3.05 REMOVAL OF EXISTING INTERIOR CONCRETE FLOOR SLABS

A. Prior to beginning any demolition of existing interior concrete slab on grade work, the General Contractor shall assess the existing slab to determine the location of any existing utility lines (i.e., plumbing, electrical, cable, phone, etc.) that may conflict with the demolition /removal work. Potential conflicts shall be investigated and resolved prior to continuing with the demolition work.

B. Take measures to avoid dust, dirt and debris entering neighboring residences. Avoid unnecessary noise.

3.06 REMOVAL OF EXISTING FINISH FLOORING

A. All existing finish flooring materials indicated to be removed, shall be removed by the General Contractor. The General Contractor shall remove existing finish flooring, rubber/vinyl base, adhesive/mastic, and any fillers below the flooring down to the existing substrate. Note: some areas of existing finish flooring to be removed by the General Contractor may have been installed over a “soft, black” filler material; said material removal may include, but not be limited to, scraping and/or shotblasting. The General Contractor shall be responsible for the preparation of all floor substrates to receive new finish materials as specified in applicable technical specifications.

3.07 PATCH AND REPAIR EXISTING SURFACES

A. Prior to beginning any demolition, each Contractor shall assess the location of any existing utility lines (i.e., plumbing, electrical, cable, phone, etc.) that may conflict with the demolition /removal work. Potential conflicts shall be investigated and resolved prior to continuing with the demolition work.

B. Where work requires cutting/patching existing surfaces, each applicable Contractor shall replace any portion of existing floors/ceilings/walls removed to access the work with new to match existing. Work may include, but not be limited to:

1. Existing masonry walls shall be cut out as required for access and patched with “toothed-in”

masonry units to match existing adjacent units; provide a flush sound surface and final painting of concrete masonry units to match existing.

a. Provide Type "S" mortar for concrete block in exterior walls and bearing walls.
b. Provide Type "N" mortar for face brick and tuck pointing.

2. Existing concrete floor slabs: Where work requires removal/replacement of existing interior floor slabs, Contractor shall sawcut areas to be trenched/removed, then break up and totally remove existing slab debris to accommodate new construction.
   a. Provide minimum of 4" – 6" gravel under area to receive new concrete slab on grade.
   b. Provide 15 mil polyolefin film vapor barrier, as approved by Architect, over gravel base on all interior concrete slabs on grade.
   c. Provide 3000psi concrete infill.
   d. Non-Shrink Grout "Sure-Grout" by Kaufman Products, Inc.; "NS Grout" (non-metallic) by The Euclid Chemical Company; Quikrete Non-Shrink Precision Grout Product No. 1585-00; or Masterflow 713 Plus by BASF The Chemical Company.

C. Take measures to avoid dust, dirt and debris entering adjacent areas. Avoid unnecessary noise.

3.08 DEBRIS

A. Remove debris, as it accumulates from demolition operations. Do not store or permit debris to accumulate on site. If Contractor fails to remove excess debris promptly, Architect reserves right to cause same to be removed at Contractor's expense.

B. Disposal of all debris shall comply with Pennsylvania solid waste laws.

END OF SECTION 024200

SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the cast-in-place concrete work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. The Contractor shall coordinate the work under this project so as to assure the proper incorporation within the concrete of all anchor bolts, piping, conduit, and other iron and metal items, which will be furnished and placed by others.

C. Should the completed work of this Section, or any portion thereof, fail to be in compliance (non-conforming) with all the requirements herein specified, but ultimately be accepted by the Owner, the Contractor shall provide a credit to the Owner calculated at $100 per cubic yard for every 100 psi under the specified strength at 28 days, and/or for every 1" over or under the specified slump, if super plasticizers are used, and/or if the air content tests below 5% or greater than 7%. The Contractor shall provide an additional credit to the Owner calculated at $100 per square foot for exterior concrete slab and/or curb work not water cured as herein specified.

1. All cracked concrete shall be replaced as specified in Paragraph 3.016.A.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Unit Masonry - Section 042000.

C. Metal Fabrications - Section 055000.

D. Thermal Insulation - Section 072100.

E. Weather Barriers - Section 072500.

F. Signage - Section 101400.

G. Translucent Polycarbonate-Panel Canopy Assemblies – Section 107316.

H. Earth Moving - Section 312000.

I. Storm Drainage Utilities - Section 334000.

J. Foundations, footings and pads for mechanical and electrical equipment, such equipment to be furnished and installed by separate contractors.

1.03 REFERENCE SPECIFICATIONS

A. ACI 301 “Specifications for Structural Concrete” Latest Edition, except as hereinafter modified by these specifications, is hereby incorporated as a part of these specifications and are as much a part of the contract documents as if reproduced herein. Modifications as hereinafter specified shall take precedence over items specified in ACI 301. All ACI 301 items, unless modified as hereinafter specified, are incorporated as written. When any part of any item is modified or voided by these specifications, the unaltered provisions of that part shall apply as written.

1. A copy of ACI 301 shall be kept in the project field office at all times. No work shall proceed until persons directly responsible for the project representing the contractor, subcontractors, suppliers and testing agencies have a copy of this specification and an understanding of the provisions therein.

B. ACI MNL-15 (formerly SP-15) Field Reference Manual (2016)

1. A copy of this publication shall be kept in the field office at all times during concrete construction.

C. Concrete shall conform to all provisions of the latest edition of the (ASTM) American Society for Testing and Materials and the (ACI) American Concrete Institute noted within this specification, except where modified as hereinafter specified.

1.04 CODES AND STANDARDS

A. Concrete construction shall be in compliance with ACI 318 (2019) and Chapter 19 of the 2021 IBC (specifically Section 1905 Modifications to ACI 318). In case of conflict between any of the hereinafter specifications and ACI 318 and/or the 2021 IBC, the more stringent requirements shall govern.

B. Wherever testing and evaluations of test results are listed in ACI 318, ACI 301, and/or ACI MNL-15, the following modifications shall take precedence:

1. Strength tests shall be each cylinder tested at 28 days to determine f’c. Laboratory 28 day cylinder breaks shall equal or exceed the specified 28 day design strength f’c for each cylinder tested.
2. Field cured cylinders are not recognized by these specifications.
3. Core testing is only accepted when approved by the Architect.
4. Concrete in an area represented by core tests shall be considered adequate only if testing of all core samples meet or exceed the specified 28 day design strength f’c. Exterior air entrained concrete test results not meeting the 28 day design strength f’c shall be rejected and considered not acceptable.
5. If tests of concrete do not meet herein specified requirements, the Architect can request additional testing of concrete beyond that of standard strength testing. All costs of additional testing shall be at the Contractor’s expense.

C. Test results of concrete performed after the specified 28 day testing date are not recognized by these specifications.

D. Concrete Patch/Repair work shall be performed according to International Concrete Repair Institute’s (ICRI) guidelines.

1.05 QUALITY ASSURANCE

A. Qualifications of Concrete Finisher: The concrete finisher shall have a minimum of five (5) years experience in the finishing of exposed concrete floor slabs (interior and exterior) and shall submit list of at least five (5) Projects with finish floors of this type, each with a surface area of not less than this application, which he has finished within the last three (3) years.

B. Samples: Minimum 5' x 5' sample areas of the following shall be prepared at the jobsite for the Architect and Owner to review. Each sample area shall be reviewed prior to application of sealer as well as following application of sealer. If any sample area is not acceptable to the Architect and Owner, the Contractor shall prepare another sample and adjust application of materials as required to achieve a finish to the satisfaction of the Architect and Owner. Approved samples shall serve as a Standard for the Project.

1. Sample of exposed interior concrete floor slab with sealer application.
    a. Interior concrete floor slabs indicated to be left exposed and finished with sealer, shall be covered with specified protective covering once slab has cured sufficiently for remaining construction to proceed. Protective covering shall remain in place until construction work has been completed and slab is cleaned and prepared to receive sealer. After application of sealer/finish, concrete slabs shall be again be covered with specified protection material until area is accepted by Owner and Architect.
2. Sample of exposed exterior concrete with sealer application.

C. A Pre-Installation Conference shall be held at the job site prior to the placement of any concrete work on-site and submittal of concrete mix designs. The purpose of this meeting shall include, but not be limited to, a discussion on the first class quality expectations of the Architect/Owner regarding concrete work and the Contractor's intent to provide same, evaluation of field conditions, review of the Contractor's proposed methods and procedures for installation of concrete materials, review of the Contractor's proposed curing and protection plans, locations of control joints, finish of exposed concrete slabs, etc. In addition to the Project Architect, the General Contractor, his concrete installer, his concrete supplier, and his concrete testing agency shall attend the Pre-Installation Conference along with the building Owner's Representative. A representative of each Prime Contractor affected by the concrete work may also be in attendance for a discussion on the coordination of all Prime Contractors.

D. Protection of Concrete Slabs: The General Contractor shall be responsible to protect all concrete slabs (interior and/or exterior) from initial slab pour/finish until final acceptance by Owner, especially slabs intended to remain exposed and receive finish sealers (clear and/or colored slabs). Protection may include but is not necessarily limited to the following:

1. Hydraulic powered equipment shall be diapered to avoid staining the concrete.
2. No vehicles by any trade shall park on the slab. If necessary, drop cloths shall be placed under vehicles at all times.
3. Pipe cutting machines shall not be used on concrete slabs.
4. Steel shall not be stored on slabs to avoid rust stains on slabs.
5. Concrete slabs and/or toppings are not designed to be working platforms during construction. Each trade shall coordinate equipment needs with the General Contractor. The Project Engineer will not provide calculations concerning any slab's ability to hold contractor's equipment.

E. All work shall be performed to secure for the entire job homogeneous concrete having required strength, durability and weathering resistance, without planes of weakness and other structural defects

and free of pronounced honeycombs, air pockets, voids, projections, offsets of plane, and other defacements on exposed surfaces.

1.06 SUBMITTALS

A. Test Reports / Submittals on construction materials (i.e.: aggregates, concrete mixes, strength test results) are to be dated no later than twelve months prior to the Date of Contract for this project.

B. Provide the following submittals in accordance with ACI-301:

1. Mill test reports shall be furnished for all cement and, in addition, the cement shall be subject to inspection and tests by the approved laboratory on the basis of samples taken from shipment. All expenses in connection with inspection and testing shall be borne by the Contractor.
2. Admixture certification. Chloride ion content must be included.
3. Aggregate certification.
4. Concrete mix designs for each class of concrete as well as each class placed by different methods, i.e., “buggy”, “pumped”, etc.
5. Construction and control joint plans for all exposed concrete (interior and exterior), incorporating all joint locations (i.e., corners, columns, etc.) with control joints that may already be shown on drawings.
6. Method of developing bond at joints.
7. Method of adding admixtures.
8. Materials and methods for curing.
9. Testing Agency to perform services required in ACI-301, Section 16.7.
10. Laboratory tests on concrete.

C. Compilations of all Construction Testing as required in Paragraph 3.02 shall be submitted with the Contractor's Closeout Submittals as specified in Section 017700.

D. Shop drawings for reinforcing steel and accessories prepared in accordance with "Details and Detailing of Concrete Reinforcement," ACI 315-99. The shop drawings are interpretations of and are supplemental to the design drawings and specifications. Their intent is to demonstrate to the Architect that this Contractor has understood the design concept, and to provide the detailed information necessary for the fabrication, assembly and installation of the products or materials specified. Reproductions of any type made from the Architect’s design drawings will not be acceptable as shop drawings. Neither the shop drawings nor comments placed on them by the Architect shall be construed as being change orders. If any deviations, discrepancies or conflicts between the shop drawings, the design drawings, and specifications are discovered, either prior to or after the shop drawings have been reviewed, the design drawings and specifications shall control and shall be followed.

E. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

F. Submit layout drawings/elevations for locations for any and all pipe penetrations through foundations, grade beams, etc.

G. Inclement Weather Concrete Construction Protection Plan: Contractor shall submit to the Architect for review, the Contractor’s proposed inclement weather concrete construction protection plan. Submittal shall be made prior to the Pre-Installation Conference specified above, and a minimum of one

(1) month prior to cold/hot weather concrete construction.

1.07 CERTIFICATION

A. The Contractor shall furnish notarized certificate executed in triplicate confirming that all concrete produced for the project will not contain any admixtures (addition of any substance) except as herein specified and approved by the Architect. Certificate shall be signed by the producer of the concrete and countersigned by the Contractor. The certificate shall be furnished to the Architect after approval of source of supply and prior to delivery of any concrete to the project site. Any concrete delivered prior to receipt of the certificate will be rejected.

1.08 LABORATORY

A. The Contractor shall retain and pay for the services of a qualified independent laboratory to perform all sampling, testing and inspecting in connection with all materials entering into the concrete work, including cement, aggregates, exact location of pour, mix design type, water, reinforcing, ambient and concrete temperatures, tests of concrete cylinders to determine strength of mix, and curing methods and applications. Such laboratory shall be submitted to the Architect for approval.

B. Concrete tests shall be performed as specified in Paragraph 3.02. Field test reports shall be provided to the Architect the day the concrete is poured. Laboratory test report results shall be delivered, and in the Architects possession, within three (3) days of the seven (7) and twenty eight (28) day cylinder tests for review or the concrete will not be accepted.

1. Cylinders broken and reported by the concrete supplier will not be acceptable and shall be grounds for the concrete to be rejected.
2. The Contractor's testing agency shall electronically distribute, in advance of hard copy mailing, to the Architect and the Owner's Representative, all test reports within 24 hours of testing. Under no circumstances shall the Contractor remove the Architect and/or Owner's Representative from the electronic and/or hard copy distribution of test reports or change the specified frequency of testing. Electronic address(es) for the Architect and the Owner's Representative will be issued during the Initial Job Conference meeting.
3. Compilations of all Construction Testing as required in Paragraph 3.02 shall be submitted with the Contractor's Closeout Submittals as specified in Section 017700.

C. Quality Assurance:

1. The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E329-09 "Standard Specification for Agencies Engaged in Construction Inspection and/or Testing.
2. Cast-in-place concrete testing and inspection must be performed by a person with a N.I.C.E.T. and/or ACI Certificate and reviewed by a licensed Civil Engineer.
   a. ACI Certificate: ACI Concrete Field Technician – Grade I.
   b. NICET Certificate: Concrete Testing – Level I.
3. Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.
4. Contractor shall have on site, during concrete pouring, an authorized, responsible representative who will determine the acceptance or rejection of each concrete mix truck sent from the approved batching plant.

D. Concrete testing laboratory results shall be limited to reporting just the testing results. The testing

laboratory shall only state if the concrete meets or does not meet the 28 day specifications. The concrete testing laboratory report shall not contain language in any form stating that the concrete is acceptable.

1.09 STORAGE AND PROTECTION

A. Miscellaneous materials shall be covered with waterproof material, carefully piled off the ground in such manner as to ensure proper drainage, ventilation and protection from the weather as approved by the Architect.

B. Storage: Storage of cement and aggregates shall be as specified in ACI-301, Paragraph 2.5.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cement: All cement for exposed concrete to public view to be from the same mill.
   1. Portland Cement: Normal Portland Cement Type 1, 1L, or Type 2 conforming to ASTM Standard Specification Designation C150 shall be used in all items of concrete work. Portland Cement shall not be used which has been retrieved or reclaimed from used bags.
      a. Type 1L cement also known as "portland-limestone cement" or PLC.
   2. The temperature of all cement at the time of delivery to the mixer shall not exceed one hundred and twenty-five (125) degrees Fahrenheit.

B. Water-reducing Admixtures:
   1. Generally, all concrete shall contain the following water-reducing or water-reducing retarding admixture, unless otherwise approved by the Architect:
      a. Water-reducing Admixture: "Eucon WR-75" by The Euclid Chemical Company, "Master Pozzolith 322" by Master Builders, or "Plastocrete 160" by Sika Chemical Corporation. The admixture shall conform to ASTM C494, Type A and not contain more chloride ions than are present in municipal drinking water.
      b. Water-Reducing, Retarding Admixture: "Eucon Retarder-75" by The Euclid Chemical Company, or "Plastiment" by Sika Chemical Corporation. The admixture shall conform to ASTM C494, Type D and not contain more chloride ions than are present in municipal drinking water.
   2. The Architect/Engineer may consider mid-range water reducers in times of extreme weather conditions. Super plasticizers are not permitted.

C. Air Entraining Admixture: Conform to ASTM C260.

D. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted. Accelerators are not permitted. Super plasticizers are not permitted.

E. Fly ash is not permitted as a component of reinforced concrete mixes for this project.

F. Certification: Written conformance to the above mentioned requirements and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Engineer/Architect.

G. Water: Shall be as specified in ACI-301, Paragraph 2.3.

H. Fine Aggregate: Fine aggregate shall be as specified in ACI-301, Paragraph 2.4. Organic impurities shall be in accordance with ASTM Specification C40. No fine or coarse aggregate containing “slag” or components of “slag” shall be acceptable.

1. Aggregate supplier shall submit certification that aggregates do not contain ferrous sulfide or other expansive properties, such as a petrographic examination per ASTM C295.

I. Coarse Aggregate: Shall be as specified in ACI-301, Paragraph 2.4 and shall consist of crushed limestone in accordance with ASTM Specification C33. No fine or coarse aggregate containing “slag” or components of “slag” shall be acceptable.

1. Aggregate supplier shall submit certification that aggregates do not contain ferrous sulfide or other expansive properties, such as a petrographic examination per ASTM C295.

2.02 MISCELLANEOUS MATERIALS

A. Metal Reinforcement: Metal reinforcement shall conform to the requirements of "Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement" (ASTM A615) or "Specification for Rail-Steel and Axel-Steel Deformed Bars for Concrete Reinforcement" (ASTM A996). Grade shall be minimum 60 ksi, unless shown otherwise on the drawings. Standard specification for welded steel wire fabric for concrete reinforcement (ASTM A1064).

1. Reinforcing steel is not permitted to be welded. Two pieces of reinforcing steel shall be lap spiced or couplers used at the ends.

B. Reinforcement Bar Supports: Reinforcement bar supports shall be in accordance with requirements of "The Concrete Reinforcing Steel Institute" Specifications for Bar Support. All supports required for concrete above grade shall be Class "1", protected plastic. Provide in sizes as required.

C. Control Joint Screed at End of Pour Locations (for interior slabs): Shall be Load Key Joint as manufactured by Superior Concrete Accessories, Inc., 64 South Broadway, Red Hook, NY, or approved equal. Material shall be 24 gauge galvanized steel with 1-1/8" knockouts 6" o.c. Supporting steel stakes shall be 16 gauge, 1" wide by length as required. Install stakes a maximum distance of 2'-0" for slabs 8"-10" thick.

1. Pro-Key as manufactured by BoMetals, Inc., Powder Springs, GA, is approved for bidding.

D. Control Joint Former (for interior slabs): Shall be Zip Joint, two piece type made of PVC as manufactured by BoMetals, Inc., Powder Springs, GA. Provide in depth as required for slab thickness: Catalog #1010, 1", for 4" slabs; Catalog #1011, 1 1/2", or #1012, 2", for slabs greater than 4".

1. Speed-E-Joint, a Sealtight Plastic Joint Material, as manufactured by W. R. Meadows, Inc., is approved for bidding.

E. Expansion Joint Filler for Exterior Slabs, Sidewalks, and/or Curbs: Expansion joint fillers shall be full depth of slab and uniform throughout Project sitework.

1. 1/4” Thick Expansion Joint Filler with Pre-scored Removable Strip: Deck-O-Foam by W.R. Meadows, Inc. Flexible, lightweight, non-staining, polyethylene, closed-cell expansion joint filler. Once concrete has cured, remove pre-scored removable strip and install sealant material, as specified in Section 079200, in joint.

F. Non-Shrink Grout: shall be "Sure-Grout" by Kaufman Products, Inc.; "NS Grout" (non-metallic) by

The Euclid Chemical Company; Quikrete Non-Shrink Precision Grout Product No. 1585-00; or Masterflow 713 Plus by MBBC. The grout shall conform to CRD C-621, "Corps of Engineers Specification for Non-Shrink Grout". All exposed grout shall be the specified non-metallic type. Grout shall be formulated to achieve over 5,000 psi compressive strength.

G. Liquid Curing and Sealing Compounds for interior floor slabs scheduled to receive additional finish Flooring (resilient): Products as hereafter listed shall be guaranteed by the manufacturer in writing not to affect the adherence or performance of the applied floor finish material and/or finish paint and shall be reviewed with the Project Architect/Engineer. Listed compounds may only be used following the initial seven day wet cure as specified in Paragraph 3.014.

1. Products shall be high solids acrylic copolymer to cure new concrete, meeting or exceeding requirements of ASTM C309, Type 1, Class B (liquid membrane forming compounds for curing concrete, product shall restrict the loss of water to not more than 0.55 kg/m^2); and ASTM C1315, Type 1, Class B (tile adhesion test requirements). Products: “Everclear TB” or "Aquacure VOX" by The Euclid Chemical Company; or "MasterKure CC 180 WB (formerly Kure-N-Seal)" by MBBC. (Sodium Silicate Compounds are prohibited.)

OR

2. Dissipating Liquid Curing Compounds complying with ASTM C309, Type 1, Class B. Formulated from hydrocarbon resins to chemically break down after four weeks and eventually wear off completely. Products may include "Kurez DR VOX" by The Euclid Chemical Company, or approved equal.

H. Sealing and Hardening Compound for interior exposed concrete slabs: Shall be a lithium silicate sealer, densifier, and hardener. Product shall be VOC compliant and water-based. Acceptable products include, but may not be limited to:

1. “Consolideck LS” by Prosoco; or
2. “Consolideck BD1” by Prosoco (a silicate blend)
2. Apply in minimum of two applications per manufacturers recommendations.

I. Penetrating Water Repellent Sealer for exterior exposed concrete: Acceptable Products:

1. "Baracade WB 244" or “Chemstop WB Regular”, both as carried by The Euclid Chemical Company, water based, deep penetrating liquid sealers of siloxane/silane, to make concrete surfaces repellent to water and salts.
2. MasterProtect H 1000 by Master Builders Solutions, 100% silane penetrating sealer.
3. Baracade Silane 100 C as carried by The Euclid Chemical Company, 100% silane penetrating sealer.

J. Materials for concrete restoration work, include but may not be limited to, the following as manufactured by the Euclid Chemical Company (Euco) and/or MBBC. Selection of materials to be utilized on the Project shall be dependent upon condition of substrate, once the substrate has been cleaned, exposed, and prepared and reviewed with Architect:

1. Primers and/or Bonding Agents: As required/recommended by repair material manufacturer (if required). Materials may include, but not be limited to, any of the following:
    a. Bonding Adhesive: Euco #452 Epoxy System, two-component adhesive and binder.
    b. Bonding Agent for Concrete Repair Mortars and Anti-Corrosion Coating for Steel Reinforcement: Euco Duralprep A.C., a three-component, water based epoxy modified Portland cement bonding agent and anti-corrosion coating.
    c. MBBC MasterEmaco P124, Water-based epoxy-cementitious bonding agent and rebar coating

d. Euco Dural Fast Set Gel, rapid setting, non-sag, high modulus epoxy adhesive and binder.
e. Euco Dural Fast Set LV, rapid setting, high modulus epoxy adhesive and binder.

2. Concrete Repair Materials:
   a. Euco VersaSpeed, rapid setting repair mortar (one-component product) for repairing concrete surfaces from 1/4” to 6” thick.
   b. Euco Verticoat Supreme, one component, latex modified, cement based mortar with corrosion inhibitor for trowel applied vertical and overhead repairs.
   c. Euco Epoxy #456 Mortar for repairing concrete surfaces from 1/8" to 2" thick.
   d. Euco Thin-Top Supreme (for repairs 1/16"-3/8" thick) &/or Concrete-Top Supreme (for repairs 3/8"-2" thick), latex and microsilica modified cementitious products.
   e. MBBC MasterEmaco S477 CI Repair Mortar,
   f. MBBC MasterEmaco T 1061EX, rapid setting cement based pre-extended concrete repair mortar for horizontal surfaces (for applications 1 ½” – full depth)
   g. MBBC MasterEmaco S440, pourable and pumpable pre-extended self-consolidating repair mortar for Horizontal and/or Vertical Repairs.
   h. Master Builders MasterEmaco T 1061, rapid setting cement based concrete repair mortar for horizontal surfaces.
   i. Master Builders MasterEmaco S440MC, flowable micro concrete (pumped or poured for large volume repairs).
   j. Master Builders MasterEmaco N425 Non-sag concrete repair mortar with integral corrosion inhibitor for vertical and overhead applications. (to “rub out” surfaces for smooth finish)
3. Anti-Corrosion Coating for Steel Reinforcement:
   a. Euco Duralprep A.C. as specified above.
   b. MasterProtect P 8100AP Zinc Rich Primer.
4. Crack Repair Sealants as manufactured by Sika:
   a. Small Cracks: Sikaflex 2C SL Polyurethane Sealant
   b. Larger Cracks: Sikadure 22 Lo-Mo Epoxy

   OR

   c. 2-component, self-leveling Polyurethane Sealants as specified in Section 079200.
5. Crack Injection Materials by Euclid for crack sealing:
   a. Euco #452 GEL Epoxy System, two-component adhesive and binder; or
   b. Dural Injection Gel by Euclid, two-component, 100% solids, high strength epoxy adhesive.

K. Concrete Cleaner Products: Products as hereafter listed are as manufactured by PROSOCO Inc., Kansas City, KS:
1. Sure-Klean Light Duty Concrete Cleaner, nonetching acidic cleaner for smooth concrete surfaces.
2. Sure-Klean Heavy Duty Concrete Cleaner, etching acidic cleaner for textured concrete surfaces.
3. ConcreteScience Oil Stain Remover, mildly alkaline deep penetrating degreaser for concrete, environmentally responsible.
4. Prosoco’s Consolideck PreKlean

L. Gravel Base for under slabs on grade: See Section 312000.

M. Foundation Pipe Sleeves: Following are for maximum 6” diameter pipes, all details shall be

reviewed with Project Engineer.

1. Steel Pipe, ASTM A53, minimum Schedule 40, hot dipped galvanized according to ASTM A123.

N. Protection for exposed interior concrete slabs (for All Concrete Slabs, once slabs have cured sufficiently to continue other construction activities): Covering shall be Ram Board, a 46 mil thick, heavy-duty, temporary floor protection engineered with Flex-Fiber™ & Spill Guard™ technologies. Rolls - 38" x 100'.

O. Cast-in Place Tactile Warning System: Shall be ADA truncated dome detectable warning tiles. Dome dimensions shall be: 1) base diameter - .9 of an inch; 2) top diameter - .45 of an inch; 3) height - .2 of an inch; 4) spacing - 2.35 inches center to center; as required to meet the American Disabilities Act for Detectable Warnings. Acceptable products: Step-Safe by Castek, Inc. Polymer Concrete Products, a Transpo Ind. Company, New Rochelle, NY. Color of precast polymer concrete tiles to contrast concrete as selected by Architect from manufacturers standard colors. Tile size: 12” x 12” x 1/2”.

1. Additional Acceptable Products:
   a. Cast-in-place Tactile System by Armor-Tile (24” x 24” and/or 24” x 36” tile).
   b. Cast-in-place Tactile System by ADA Solutions Inc., Chelmsford, MA (24” x 36” and/or 24” x 48” tile x 1/4” thick with embedment ribs 3" on center through entire length of tile and entire perimeter). Guaranteed for five (5) years, including manufacturing defects, breakage, and deformation. Fabricated of glass and carbon composite with fiberglass truncated domes.

P. Paint for Parking Markings: Shall conform to requirements of PADOT Specifications Publication 408, minimum quality as follows:

1. Benjamin Moore INSL-X portfolio of traffic paints, or
2. Sherwin-Williams Pro-Park Waterborne Traffic Marking Paint or Hotline Waterborne Traffic Marking Paint, or
3. PPG Traffic & Zone Marking Paint (Zoneline).

2.03 PROPORTIONING

A. General: Concrete mix submittals are required for each type of concrete, as well as, each type placed by different methods, i.e., submit a concrete mix design for concrete Class C-2 placed by “buggy” and a separate concrete mix design for concrete Class C-2 placed by “pumping”.

B. If trial batches are used, suggested proportions are indicated hereinafter. The specific type, or types of concrete to be supplied for the various parts of the work shall be as follows:

Footings*, Piers	Class C-3	Type 1, 1L, or Type 2 cement
Interior Floor Slabs on grade	Class C-2	Type 1, 1L, or Type 2 cement
Exterior Slabs, Curbs, Sidewalks, Structural Slabs	Class E-2 Air-Entrained	Type 1, 1L, or Type 2 cement
*Exterior Post Footings and/or Column/pole foundations exposed at grade	Class E-2 Air-Entrained	Type 1, 1L, or Type 2 cement

C. Variations in Proportions: The data listed has been computed in accordance with The American Concrete Institute Standard Recommended Practice for Normal and Heavyweight Concrete, ACI 211.1.

Quantities of fine and coarse aggregate, as listed, are based on the use of medium sand with a bulk specified gravity of 2.65, and also on a concrete of medium consistency. The percent of fine aggregate must also be adjusted for aggregates of characteristics different than stated above, and also to attain a concrete of a consistency other than medium. The percent of fine aggregate must also be adjusted so as to obtain proper workability and a smooth, dense, homogeneous, plastic mixture, free from segregation. Such variations shall be made in accordance with ACI 211.1 but in no case shall the water content per bag of cement exceed the tabular values and in all cases the listed compressive strengths must be attained. The cement factor listed in the table is minimum and must not be decreased. Approval of Architect must be attained prior to using mixtures in variance to following tables. The mix design proposed on the basis of trial batches must achieve an average compressive strength 1200 psi greater than the specified strength, f'c.

Table "A" - Suggested Trial Mixes for Non-Air Entrained Concrete is based on the following:

1. Medium consistency of the concrete minimum 2” to maximum 4” in slump.
2. A specific gravity of the aggregates of 2.65.
3. A fineness modulus of 2.50.

	Class of Concrete	
	C-2	C-3
28-day Minimum Compressive Strength PSI	3000	3000
Maximum Water (gallon) per 94 lb. Cement (bag)	6.2	6.55
Maximum Size of Aggregate	1	1-1/2
Cement Factor Sacks (@ 94lb/sack) Cement per cu. yd. concrete	5.6	5.2
Maximum Water to Cement Ratio	0.55	0.58

D. Air-Entrainment shall be used for all exterior concrete as indicated in above schedule. Air-Entrainment shall not be used for interior floor slabs. The air content of the normal weight concrete as discharged from the mixer or ready mix truck shall conform to the following table, and the air content for various size aggregates shall be as follows:

Maximum Size of Coarse Aggregate (Inches)	Total Air Content Percent by Volume
3/8	8 + or - 1
1/2	7 + or - 1
3/4	6 + or - 1
1	5 + or - 1
1-1/2	4.5 + or - 1

Table "B" Suggested Trial Mixes for Air-Entrained Concrete is based on the following:

1. Medium consistency of the concrete minimum 2” to maximum 4” in slump.
2. A specific gravity of the aggregates of 2.65.
3. A fineness modulus of 2.50.
4. An air content of 6 + or - 1%.

	Class of Concrete E2 A-E
28-day minimum Compressive Strength PSI	4500
Maximum Water (gallon) per 94 lb. Cement (bag)	5.1
Maximum Water to Cement Ratio	0.45
Maximum Size of Aggregate	3/4
Cement Factor Sacks (@ 94lb/sack) Cement per cu. yd. concrete	6.9

2.04 CENTRAL OR TRANSIT MIXED CONCRETE

A. Truck Mixing: Except as otherwise herein specified, ready-mixed concrete shall conform to the ASTM Specification C94.

B. Time of Hauling Ready-Mixed Cement: Concrete transported in a mixer, agitator, or other transportation device, shall be discharged at the job within fifty-five minutes of the completion of mixing. The drum shall not exceed 300 revolutions after the introduction of the water to the cement and aggregates or the introduction of the cement to the aggregates.

1. The temperature of the concrete at the time of delivery from the mixer, agitator, or other transportation device, shall not exceed ninety (90) degrees Fahrenheit, regardless of length of time of transportation travel.

C. The addition of water to a truck shall be prohibited.

2.05 FORMS

A. General: Forms shall be as specified in ACI-301, Chapter 4.

B. 'Slip Form' concrete curb machines are not permitted. Concrete curbs shall be formed as detailed on drawings.

2.06 REINFORCEMENT

A. Shall be as specified in ACI-301, Chapter 5.

B. Steel Fabric for Concrete Slabs: Unless shown otherwise on the drawings, all concrete slabs shall be reinforced with welded wire mesh/fabric, complying with ASTM A1064 / A1064M Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete as specified in Paragraph 2.02.A. Size of fabric, number of layers, and placement in slab as detailed on drawings. Sheets of fabric shall lap at least six (6) inches on sides and ends and laps shall be securely wired together. Fabric types include, but may not be limited to the following:

1. 6 x 6 #6 Ga. W 2.9/W 2.9 (Six (6) inch by six (6) inch (W.2.9) by No. 6) welded wire mesh/fabric. Generally, 4" & 5 ½" thick slabs shall include one layer of this fabric placed about the center line of the slab thickness.

C. Vertical Reinforcement Bars: Shall be as specified in Paragraph 2.02.A and as scheduled on drawings. Install where detailed on drawings. Reinforcement shall be inspected by the testing

laboratory prior to placement of concrete, as specified in Paragraph 3.02.

PART 3 EXECUTION

3.01 PLACING CONCRETE

A. Shall be as specified in ACI-301, Chapter 8.

B. Depositing Concrete on Steel Forming:
   1. Before placing concrete, the steel forming shall be supported as shown on the shop drawings.
   2. Immediately before placing of concrete, steel forming shall be cleaned of all dirt, debris, oil, water or any foreign matter. Supports for screeds, if required, shall be located directly over permanent supports. Construction joints shall be made at center of slab span and shall be keyed.

C. Inclement Weather Installation:
   1. Unprotected concrete work shall not occur when inclement (cold, hot, freezing, rain, etc.) weather prohibits the proper placing, forming and curing of concrete work. Unprotected concrete work includes, but may not be limited to, exterior concrete work and/or interior concrete work scheduled prior to proper building enclosure and mechanical heating and ventilating of the enclosed space.
   2. No exterior and/or unprotected interior work shall be done when rain is falling or imminent and prohibits the proper finishing of slab work.
   3. If temperatures fall below minimum temperatures as required by the nature of the work and/or rain, snow, etc., prohibit unprotected work progress, the Contractor shall adequately temporarily tent/enclose the entire work area and furnish acceptable means to provide sufficient heat to maintain a required temperature to perform the work throughout the duration of work.
      a. The Contractor shall protect concrete work during any/all times that the temperature falls below 50°F, even if the weather raises during that 24 hour period.
      b. The Contractor shall protect concrete work during any/all times that the temperature approaches freezing or below for a minimum period of 5 days.
   4. Contractor shall submit his proposed inclement weather concrete construction protection plan as specified in Paragraph 1.06.F of this Section.
   5. Additional ACI Documents to be reviewed with the Project Architect upon submittal of the Contractor's Inclement Weather Installation Plan may include the following: ACI 305R Hot Weather Concreting and ACI 306R Cold Weather Concreting.

3.02 TESTS OF CONCRETE

A. During the progress of construction, tests shall be made to determine whether the concrete as being produced complies with standard of quality as specified. These tests shall be made in accordance with ASTM Standard Methods. The Contractor shall cooperate in making of such tests and the storage and protection of specimens against injury or loss through his operation. Where cylinder molds are required, the Contractor shall pay all expenses in connection with shipping and testing of cylinders by the approved laboratory. The Contractor shall supply approved field water curing storage box for concrete test specimens, including testing laboratory cylinder pickup and transport.

B. Cement shall be subject to inspection and tests by the testing laboratory on the basis of samples taken from shipment. Samples of concrete for test specimens shall be taken at the mixer, or in the case of ready-mixed concrete, from the transportation vehicle during discharge, unless in the opinion of the Architect, it is desirable to take samples elsewhere.

C. The testing laboratory shall conduct the tests as specified. Concrete poured without the requirements of this paragraph will be rejected.

D. The testing laboratory shall inspect the reinforcing steel and wire mesh placement (including but not limited to: grade, placement, location, size, spacing, lap lengths, cover, etc., and coating of steel) prior to the beginning of placement of concrete. The Contractor shall provide ample notice to the testing laboratory and shall make available to the testing laboratory, Shop Drawings of the reinforcing steel placement bearing the approval stamp of the Architect.

1. Three (3) copies of inspection reports and required accompanying information (i.e., Project Name, Testing Agency Name, Prime Contractor Name, date and location of inspection) shall be submitted to the Architect's office.
2. The Contractor shall be required to have said inspections performed and submit reports as specified regardless of whether inspections were performed as a requirement of the building permit obtained by the Owner.

E. Concrete Test Specimens required:

1. Cylinders for laboratory-cured test specimens (refer to Paragraph F for test results and information required):
    a. One set of four standard 6" x 12" cylinders for each compressive strength test, unless otherwise directed by the Architect.
    b. One set for each 50 cu. yd. .(of each 20 cu. yd. for curb work), or portion thereof, of each class of concrete placed in any one day, and/or for each 2,000 sq. ft. of surface area placed.
2. Field test specimens required:
    a. For all air-entrained concrete work, the testing laboratory shall determine air content of concrete per ASTM C231 of each truck of concrete, in addition to the cylinder samples required.
    b. For all concrete slab work, the testing laboratory shall determine the following for each truck of concrete in addition to the cylinder samples required: air content of concrete as stated above, slump, temperature (ambient and concrete), unit weight, and placement location.
    c. If these parameters are not provided, the concrete placed in association with these test specimens will not be accepted, including but not limited to, concrete with slump in excess of 4" (4-1/2" for flat work) will be rejected.
3. Three (3) copies of said test results and required accompanying information (i.e., Project Name, Testing Agency Name, Prime Contractor Name, date and location of test) shall be submitted to the Architect's office, within the time frame specified in Paragraph 1.08. The testing laboratory is required within its report(s) to document if the specimen meets all testing criteria within the Project specifications. Test reports are not considered "acceptable", "pass", etc., unless <u>all</u> testing criteria as herein specified are met; if a specimen does not meet each or all testing criteria it shall be documented.
    a. Refer to Paragraph 1.08 for electronic distribution of test results.

F. Contractor shall provide an insulation box and cooler on-site (with temperature maintained

between 60˚ - 80˚ F) for molded and stored cylinder samples for laboratory cured test specimens and to protect samples prior to their delivery to the laboratory. The following test results and information are required: slump, design strength, concrete type and application, % air content of concrete, ambient temperature, concrete temperature, time and date of placement, truck delivery number and ticket/mix certificate, unit weight, and location of pour. These parameters must be recorded for each set of cylinders. If these parameters are not provided, the concrete placed in association with these tested cylinders will not be accepted.

1. The Contractor must insure that the test cylinders are received by the testing laboratory a maximum of twenty-four hours after the test specimens have been molded.
2. Laboratory tests for compressive strength: one specimen shall be tested at seven days, two specimens tested at twenty-eight days and one specimen retained in reserve at the laboratory for later testing if required.

G. All concrete requiring a slump change of more than 2", except when a Mid-Range Water Reducing Admixture has been approved for use, will be rejected.

H. Acceptance of Concrete, Paragraph 17.2, ACI-301 shall be amended to read that acceptable results of each individual twenty-eight day cylinder break shall equal or exceed specified concrete strength.

I. When concrete fails to meet the acceptance criteria specified in Section 17.2, ACI-301, and as above amended, the Architect may order further testing of the concrete in place in accordance with Section 17.3. Concrete may be accepted if test results of each individual core equals or exceeds specified concrete strength. When such tests are ordered, cost of testing shall be paid by the Contractor.

J. Verification, inspection and testing of concrete construction shall also be in compliance with the 2021 IBC (including, but not limited to, Section 110 Inspections and Chapter 17 Special Inspections - Sections 1704 and 1705, specifically 1705.3 Concrete Construction, including Table 1705.3, as applicable to this specific project). In case of conflict between any of the above requirements and the IBC, the more stringent requirements shall govern.

3.03 CONSTRUCTION JOINTS

A. Construction joints shall be as specified in ACI-301, Paragraph 6.1, except as modified herein. Control joints for interior slabs shall be constructed using Zip Joints, saw-cutting of control joints shall not be permitted.

1. Saw-cutting of exterior control joints shall not be permitted; exterior control joints shall be tooled.

B. Locations of Joints: Construction joints shall be located where indicated on drawings or where directed by the Architect. Construction joints and bond breaking material shall be provided at all plumbing, electrical, etc., stub-up and/or drain/floor box locations. These additional joints shall be connected in each direction to another joint or into a wall.

C. Procedure in Forming Joints: The procedure specified under "Depositing Concrete" for bonding new concrete to old shall be followed in the formation of all joints. The reinforcement shall continue through the joint. The specified bonding compound or epoxy adhesive must be used for construction joints in structural members. For concrete without reinforcement, shearing strength shall be provided

by means of a concrete key or dowel bars as the Architect may direct.

3.04 EXPANSION JOINTS

A. Install specified expansion joint material at all expansion joints of exterior concrete slabs on grade and curbs and at intersections of slabs and curbs, slabs and buildings, slabs and stairs, other like occurrences and/or at other locations shown on drawings. Caulking of joints is specified in Section 079200. Also refer to drawings and Paragraph 3.010 for requirements on locations of expansion joints.

3.05 PROVISIONS FOR OTHER TRADES, WORK, ETC.

A. Provisions for pipes and conduits shall be as follows:
   1. The Contractor shall examine the drawings and specifications for work of other trades especially for Plumbing (including floor drains), HVAC and Electrical Work. In laying out his work he shall make provisions for the installation of all sleeves, pipes, conduits, boxes, inserts, hangers, floor drains and work of other trades and shall be done in such manner that the construction will not be weakened.
   2. The Contractor shall furnish such labor and material for his part of the work to make it conform to the work of other trades or contractors.
   3. When conduits or pipes embedded in slabs are of larger outside diameter than one and one-half (1-1/2) inches or when they come closer than one (1) inch from either upper or lower surface of the slab, expanded metal or wire mesh shall be laid and extended beyond such conduit or piping at least eight (8) inches on all sides. Conduit/pipe greater than 1-1/2” may only be employed for small, limited areas. Long conduit runs in slabs with minimal cover are not permitted.
   4. Conduits or pipes shall be spaced not closer than three (3) diameters on center and they must be so placed as to avoid changing the location of the reinforcement from that shown on the drawings.
   5. Sleeves, bolts, sockets, etc., required by other trades or contractors shall be placed by them but this contractor shall maintain the position of all such inserts until the concrete is placed.
   6. Coordinate the location and finish floor elevations of floor drains with the Contractor furnishing and installing floor drains to assure proper slope of concrete slabs to the drains. Generally, slope floor slabs a minimum of 1/4" per foot towards floor drains. Provide positive drainage of floor slab to prevent puddling of water.

B. Ties, Inserts and Anchors: This contractor shall set and embed anchors, inserts, ties, furnished by others for the attachment of other materials.

C. All contractors whose work is related to the concrete or must be supported by it, shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

3.06 ADMIXTURE

A. Water-Reducing Admixture: The admixture shall be used for all concrete when the ambient temperature is below 75°F. Use three fluid ounces per 100 pounds of cement.

B. Water-Reducing, Retarding Admixture: The admixture shall be used for all concrete when the ambient temperature is 75°F. or above as follows:
   1. All concrete except floor slabs, stoops and sidewalks use two fluid ounces per sack of

cement.

2. For floor slabs, stoops and sidewalks when temperature is between 75°F. and 85°F. use three fluid ounces per sack of cement and when temperature is above 85°F. use four fluid ounces per sack of cement.

3.07 GRAVEL BASE

A. Gravel base under concrete slabs on grade is specified in Section 312000.

3.08 VAPOR BARRIER

A. Vapor barrier for under interior concrete slabs on grade shall be installed as specified in Section 072500.

3.09 CONTROL JOINT SCREED

A. For end of pour locations, install stakes a maximum distance of 2'-0" o.c.

3.010 CONCRETE SIDEWALKS/SLABS AND CURBS

A. Concrete Sidewalks, Slabs and Curbs shall be installed as follows:
   1. Concrete sidewalks and curbs shall be installed as shown on the drawings. The gravel base shall be provided with adequate drainage to prevent accumulation of water under the slabs. The base shall be wetted thoroughly immediately before placing concrete. Wetting shall not be to the extent that surplus or pools of water will be evident.
   2. All sidewalks shall be constructed to have a minimum cross pitch of 1/4" per foot unless otherwise noted on the drawings.
   3. Sidewalks, unless shown otherwise on drawings, shall be constructed in separate slabs twenty (20) feet in length except for closures. These slabs shall be separated by transverse expansion joints. The slabs between expansion joints shall be divided into lengths equal to the width of the walk by scoring transversely. All tooled scoring shall extend one-fourth (1/4) of the slab thickness into the slab. Where the slabs are more than five (5) feet in width, they may be scored longitudinally in the center, if selected by the Architect, with blocks scored transversely in length equal to the scored widths.
   4. Curbs shall be constructed as detailed on drawings and in sections not to exceed twenty (20) feet in length. Sections shall be separated by expansion joints. Joints in curbs adjacent to sidewalks shall align with sidewalk expansion joints.
      a. Note: “Slip Forming” of concrete curbs shall not be permitted as specified in paragraph 2.05.
   5. Caulk all expansion joints.

B. Also refer to “Floor Slab Finishes – General” as hereinafter specified for integral finish of slabs and/or sidewalks.

C. Also refer to “Finishing of Formed Surfaces” as hereinafter specified for rubbed finish of curbs.

3.011 CONCRETE REPAIRS

A. Damaged concrete surfaces (cracked, spalled, pitted, eroded, etc.) to be repaired shall be

prepared and cleaned to receive repair materials in accordance with repair product manufacturer's directions, which may include but not be limited to the following:

1. Remove all loose and deteriorated concrete by hand or mechanical chipping, sand-blasting, wire brushing, and/or medium to high pressure water and/or air blasting, to obtain a fractured aggregate surface. Make sure surfaces are sound, clean and free of all bond-inhibiting materials including existing seal coating and/or paint, oil, dirt, dust, laitance, mildew and standing water.
    a. Ensure that methods of removal of loose and deteriorated concrete, as well as, cleaning methods are not detrimental to bearing or load carrying ability of the remaining concrete surface/member.
2. Cracks: Remove loose and deteriorated concrete and clean concrete as specified above. Clean crack with medium to high pressure water and/or air blasting and cut 1/4" deep groove along cleaned crack, if removal is not detrimental to bearing or load carrying ability of the member.
3. For areas of visible reinforcing: Remove all concrete from around any corroded reinforcing bars and/or mesh to point where reinforcing is no longer corroded. Clean corroded metal to white metal. All rusted, corroded, and/or exposed reinforcing steel shall receive a Brush-off Blast Cleaning meeting the requirements of SSPC-SP7. Chip out a minimum of 3/4” deep concrete from behind all reinforcing steel requiring cleaning and epoxy coating.
    a. A Brush-off Blast Cleaned Surface Finish is defined by the SSPC as one from which all oil, grease, dirt, rust-scale, loose mill scale, loose rust, and loose paint or coatings are removed completely. However, tight mill scale and tightly-adhered rust, paint and coatings are permitted to remain - provided that all mill scale and rust have been exposed to the abrasive blast pattern sufficiently to expose numerous flecks of the underlying metal fairly uniformly distributed over the entire surface.
4. All blasted areas are to be cleaned of all abrasive, dust or other deleterious material prior to the application of concrete repair materials.

B. Application of repair materials: All work shall be performed according to product manufacturer’s recommendations and International Concrete Repair Institute’s (ICRI) guidelines.

1. Selection of repair materials shall be dependent upon condition of substrate, once the substrate has been cleaned, exposed, and prepared.
2. All exposed and prepared reinforcing steel shall receive specified anti-corrosion coating prior to application of concrete repair mortars, ensure that all surfaces are completely coated. Apply and allow to cure according to manufacturers recommendations.
3. Bonding Agents/Adhesives: prepared surfaces to receive concrete repair materials without an integral bonding admixture/agent, may require a coating of a bonding agent/adhesive in accordance with manufacturer's recommendations.
    a. Note: Certain repair materials may require that the prepared substrate be saturated with water to achieve SSD (saturate surface dry) substrate in lieu of application of a bonding agent/adhesive.
4. Application of repair mortars/materials shall be according to manufacturer’s recommendations, which may include but not be limited to:
    a. Mix all products as recommended by manufacturer. Mix only as much material as can readily be used.
    b. Work a scrub coat of the mixed material into the substrate to ensure intimate contact and establish bond.
    c. Complete the repair while the scrub coat is still wet and trowel finish. For thick applications mortar may require application in successive lifts until required depth is

achieved.

5. Verify that no voids remain in new concrete or other repair material.
6. Allow to cure according to manufacturers recommendations, provide curing compound if required by product manufacturer.

C. Appearance of all concrete repair work must meet with the approval of the Project Architect/Engineer.

3.012 FINISHING OF FORMED SURFACES

A. General: Exposed concrete surfaces shall be true and even, free from open or rough areas, depressions or projections. Exposed surface shall mean those surfaces of structures against which embankment, refill materials or excess excavation will not be placed or be covered by structures or portions of structures or below normal water level.

B. Spade Finish: All surfaces not exposed to general view shall be given a spade finish, which shall be obtained by forcing a flat spade or similar device down adjacent to the form and then pulling the top away from the form to bring mortar to the surface, and after the forms are removed all irregularities in the concrete surfaces shall be corrected satisfactorily.

C. Rubbed Finish: All surfaces which will be exposed to general view unless otherwise indicated on the drawings or specified shall be given a rubbed finish. This finish shall be made upon a previously spaded surface after the concrete has hardened, by rubbing with a carborundum stone to eliminate fins or irregularities. Brush finishing or painting with grout of neat cement will not be permitted. Corners or edges shall be slightly rounded by the use of the carborundum stone to eliminate fins or irregularities. Surfaces to receive a rubbed finish shall commence being rubbed forty-eight (48) hours after placement of concrete. Surfaces to receive rubbed finish shall be kept thoroughly wet until work in each section is completed.

3.013 FLOOR SLAB FINISHES - GENERAL

A. Finish all slabs, interior and exterior, to a tolerance as indicated. Differences in elevation, between two points, shall not exceed .125" in 10'. All floor surfaces shall be within $\pm$ .125" of finished floor elevations designated on plans. If variations greater than this exist, the Architect may direct the Contractor to grind the surfaces to bring them within the requirements. Patching of low spots shall not be permitted, except for floor slabs to receive finishes shall be brought to correct elevation with the application of specified patching compound. Grinding shall be done as soon as possible, preferably within three (3) days, but not until the concrete is sufficiently strong to prevent dislodging coarse aggregate particles.

B. The finish of all slabs shall be with an integral finish as hereinafter specified, suitable for the specific slab. All slabs shall be finished the same day as the concrete is poured.

C. Integral Finishes: Integral finishes as herein specified are finishes of the structural concrete slabs obtained without applying a separate topping coat. Finishes for the purpose of these specifications consist of types as follows:

1. The screeded type of integral finish shall be obtained by placing continuous screeds at 8'-0" and striking off to the surface elevation desired. Unless otherwise stipulated, this type finish shall be used on base slabs upon which quarry tile, terrazzo, ceramic pavers or similar type

wearing surfaces are to be applied.

2. The wood floated type of integral finish shall be obtained by working a previously leveled surface with a float until the desired texture is reached. Floating shall begin when the concrete has stiffened sufficiently to permit operation and the water sheen has disappeared. The surface shall be floated at least twice. Surfaces to be left exposed shall receive a broom finish following second floating. Unless otherwise stipulated, this type finish shall be used for exterior paved areas, ramps, stoops, sidewalks, and similar locations.
3. The steel troweled type of integral floor finish shall be obtained after the concrete has received a float finish as indicated above. The surface shall then be troweled at least twice to a smooth dense surface. This type finish shall be used for interior exposed concrete surfaces and for floors that will receive resilient flooring.

D. Truncated Dome Tiles (Tactile Warning System) shall be embedded into new concrete, placed 2'-0 back of all handicap accessible curb cuts:

1. Concrete sidewalk: Trowel finish concrete as specified above. Remove approximately 1/4" to 1/2" depth of fresh concrete in area to receive tiles.
2. Placement of Tiles:
   a. Tiles shall be set into freshly poured concrete, evenly, with lines parallel to edge conditions. Leave 1/8" gap between tiles and on all sides to accommodate expansion. Press tiles into concrete with edges flush with adjacent concrete surfaces. Do not use hammers to install tiles. Plywood may be placed over the tiles to add weight to assist in achieving uniform lines until concrete has cured.
   b. Allow concrete to cure before allowing pedestrian traffic on tiles.

3.014 CURING AND PROTECTION OF CONCRETE AND APPLICATION OF SEALERS

A. All concrete shall be so protected that the temperature of the surface will not fall below fifty (50) degrees fahrenheit, or that there will be no loss of moisture from the surface for a period of seven (7) days after placing. During hot weather precautions shall be taken to avoid high temperature in the fresh concrete and to avoid rapid drying. Contractor shall erect temporary sun shades and wind breaks to prevent evaporation of exposed concrete surfaces while they are being finished. Contractor shall erect necessary protection from rain of exposed concrete surfaces while they are being finished.

B. The Contractor shall submit to the Architect for approval the methods he proposes to use for protecting the concrete against low temperatures.

C. The requirements above concerning the temperature at the surface is intended to apply to the placing of concrete in those seasons of the year or in such places where the possibility of freezing or continued low temperatures is to be expected. Concrete must be protected from freezing temperatures at any time during the first one hundred twenty (120) hours. Too rapid cooling of the concrete at the end of the protection period shall be avoided. Cooling at the rate of twenty (20) degrees F. in twenty-four (24) hours is recommended.

D. Preservation of moisture:

1. Unless otherwise directed by the Architect, or hereafter specified, apply one of the following wet curing procedures to concrete not in contact with forms, immediately after completion of placement and finishing. Cure concrete by preserving moisture for a minimum of seven days. The curing process must begin immediately after final finishing.
   a. Ponding or continuous sprinkling.

b. Application of absorptive mats or fabric kept continuously wet. Mats/fabric shall be reviewed with Architect prior to application. Plain burlap is not permitted.
c. Application of sand kept continuously wet.
d. Continuous application of steam (not exceeding 150 degrees F) or mist spray.
e. Application of sheet materials conforming to ASTM C171 over concrete surfaces covered with water. Products may be curing paper and/or white-burlap-polyethylene sheet. Plain polyethylene films are not permitted. Products may include, but not be limited to:
    1) UltraCure NCF by McTech Group, Inc., Loganville, GA; or
    2) UltraCure Sun by McTech Group, Inc., for exterior use; or
    3) Transguard by Armorlon, a Division of Reef Industries, Houston, TX.
f. Application of other moisture-retaining covering as approved by the Architect.
g. Blankets, mats, fabric, sheet products, coverings, sand, etc., shall maintain100 % contact with the concrete throughout the seven day curing period. “Tiger striping” and/or other discoloration of concrete surfaces to be left exposed will not be acceptable.
h. Interior exposed concrete surfaces, not receiving any other finish flooring surface, shall be cured by wet curing process as approved by Architect and sealing and hardening compound manufacturer. Final sealer may be applied when recommended by the sealer manufacturer after the full 28 day cure.
i. Exterior exposed concrete shall be cured by wet curing process as approved by Architect. Final sealer may be applied when recommended by the sealer manufacturer after the full 28 day cure.

2. Where forms are exposed to the sun, minimize the moisture loss by keeping the forms wet until they can be removed safely. After form removal the concrete shall be cured by one of the methods listed above until completion of moisture preserving time period.
3. Following the initial seven day wet cure, a liquid curing compound may be applied to interior concrete receiving resilient finish flooring materials to complete the full twenty-eight day curing period if approved by the Project Architect/Engineer and the manufacturer of the finish material to be applied to the concrete. Note: use of a liquid curing compound does not relieve the Contractor of the requirements and responsibilities of the curing methods herein specified.
    a. Liquid curing compounds may only be used on interior concrete floors receiving finish floor covering materials if the curing compounds do not adversely affect the adherence or performance of the applied floor finish. The contractor shall certify in writing, with the submission for approval that the curing material will not affect the adherence or performance of the applied floor finish material. Curing compounds or curing and sealing compounds shall not be used on concrete slabs against which ceramic tile shall be bonded or applied.
    b. Non-dissipating and/or dissipating liquid curing compounds shall not be used on interior concrete slabs to be left exposed and/or exterior concrete.

E. General Power Washing and Cleaning Requirements:
1. All entrances, exits, and other openings to the other portions of buildings shall be sealed to prevent cleaning solutions and water from entering other portions of buildings.
2. All storm water inlets and floor drains shall be sealed to prevent cleaning solutions and water from entering the sewer systems.
3. Cleaning products and/or procedures shall be altered, if required, to achieve the desired results.
4. All cleaning solutions shall be used in strict adherence to manufacturer's printed instructions,

including but not necessarily limited to preparation, application and cleanup. All cleaning solutions shall be used in strict compliance with any and all Environmental agency requirements.

5. All surfaces adversely affected by the cleaning materials which may come in contact with cleaning materials shall be protected, including plant life.

F. Exterior Water Repellent Sealer: All exterior sidewalks, pads, structural slabs, stoops, curbs, steps, and other exterior exposed concrete surfaces shall be sealed with two (2) coats of the specified water repellent sealer. Surface preparation of the slabs and the sealer application shall be in strict accordance with the directions of the manufacturer. Field service shall be provided, upon 5 days notice, by the manufacturer of the sealer to assist the Contractor in obtaining the maximum benefits of the product under the prevailing job site conditions.

1. Application of sealer shall begin when recommended by manufacturer following the 28 day cure.Surface shall first be “bleached” and pressure washed with products/methods acceptable to sealer manufacturer and allowed to dry thoroughly.
2. Take all necessary precautions to prevent environmental factors, i.e., wind, rain, heat, from reducing the effectiveness of the sealer and causing unacceptable finish appearance of the concrete.
3. Existing Concrete shall be pressure washed with water and cleaners as required to remove all foreign substances and allowed to dry thoroughly.
4. Sample area shall be finished and approved prior to remaining sealer applications as specified in Paragraph 1.05.B.

G. Interior Sealer: All interior exposed concrete surfaces, not receiving any other finish flooring as specified in Division 09, shall receive two sealer applications.

1. Prior to the application of the sealer, a manufacturer’s representative shall review the concrete slab and advise as to the acceptability of the slab to receive the specified finish.
2. New concrete shall be well cured according to sealer manufacturer’s recommendations.
3. Slabs may also require “bleaching” and pressure washed with products/methods acceptable to sealer manufacturer and allowed to dry thoroughly.
4. Apply two (2) coats of sealer. Application of sealer shall begin when recommended by the sealer manufacturer and be in conformance with manufacturer’s instructions.
5. Take all necessary precautions to prevent environmental factors, i.e., wind, rain, heat, from reducing the effectiveness of the sealer and causing unacceptable finish appearance of the concrete.
6. Protect finish floor from traffic.

3.015 PAINTING PARKING MARKINGS

A. Parking markings shall be painted as laid out on drawings, per reviewed shop drawings, and/or as directed by the Owner.

B. The striping shall be applied only on thoroughly dry surfaces, when the atmospheric temperature is at or above 40 degrees F. Apply white, yellow, and/or blue paint as required by the owner and the ADA. Apply at mil rates and number of coats to achieve finish color as approved by the Architect and Owner. Paint colors for handicap parking stalls shall satisfy the requirements of the American with Disabilities Act and the Owner.

C. After painting, protect all markings from traffic until paint is completely dry.

3.016 REPAIR OF SURFACE DEFECTS

A. General: Shall be as specified in ACI-301, Paragraph 9.1.

B. Defective Areas: Shall be as specified in ACI-301, Paragraph 9.2, except that a bonding compound must be used. Note: patching of exposed concrete surfaces shall not be permitted. Any and all defects in concrete surfaces, once forms have been removed, shall be brought to the attention of the Project Engineer prior to any corrective work and/or application of additional finishes.

C. Tie Holes: Shall be as specified in ACI-301, Paragraph 9.3.

D. Structural Repairs: With prior approval of the Architect, as to method and procedures, the compounds used for all structural repairs shall be epoxy adhesive and/or epoxy mortar as approved by the Architect.

3.017 DEFECTIVE MATERIALS AND/OR WORKMANSHIP

A. Concrete work which is not properly formed, true, plumb or level, or which fails to meet specified minimum compressive strength, shows poor workmanship, or carelessness, or contains foreign substances or materials, shall be deemed to be defective and the Contractor shall remove this work from the site as directed by the Architect, replacing same with new materials complying with the contract specifications and meeting the approval of the Architect. Note: patching of exposed concrete surfaces shall not be permitted.

1. Remove and replace all cracked concrete, whether large or hairline cracks, joint to joint, regardless of cause, at the Contractor’s expense, throughout the one year maintenance period.
2. Non-conforming work ultimately accepted by the Owner, in lieu of being replaced by the Contractor as herein specified, shall be credited to the Owner by the Contractor, according to the calculations specified in Paragraph 1.01.C.

B. The Contractor shall pay all costs of correcting rejected work, including all additional testing costs as well as the Architect's additional services thereby made necessary.

3.018 PROTECTION OF COMPLETED EXPOSED CONCRETE FINISH FLOOR AREAS

A. After application of exposed concrete floor finishes is completed, all surfaces shall be completely covered with specified protection material until area is accepted by Owner and Architect. Failure by the Contractor to provide such protection shall result in the Architect withholding monies from that Contractor’s Monthly Application for Payment and/or withholding certification of the entire monthly application for payment.

3.019 LOADING OF CONCRETE

A. Concrete shall not be loaded until a minimum of 75% of the design strength has been achieved. Refer to OSHA. At the Contractor’s option, additional test cylinders may be made at initial pour to determine when 75% of the design strength has been achieved.

END OF SECTION 033000

SECTION 040513 - MORTAR AND GROUT

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the masonry mortar and grout for reinforced masonry work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Unit Masonry - Section 042000.

1.03 STANDARDS

A. Materials and production shall be in conformance to the latest adopted specifications of the following organizations:
1. ASTM - American Society for Testing and Materials
2. ANSI - American National Standards Institute

1.04 SUBMITTALS

A. Test Reports / Submittals on construction materials (ie: aggregates, strength test results, mortar and grout mix designs) are to be dated no later than one year prior to the Date of Contract for this project.

B. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

C. Mortar colors.

1.05 STORAGE OF MATERIALS

A. Mortar materials and sand shall be stored in such a manner as to prevent deterioration or contamination by foreign materials.

1.06 QUALITY ASSURANCE

A. All mortar work shall be performed by masonry craftworkers who have successfully completed courses through the International Masonry Institute (IMI) or the Masonry Contractor’s Association of America (MCAA). The Contractor shall provide first class quality masonry work to meet the Architect’s and Owner’s expectations.

PART 2 PRODUCTS

2.01 MORTAR MATERIALS

A. Portland Cement: Shall meet requirements of ASTM Designation C150, Type l. Masonry cements are unacceptable.

1. Any manufacturer's bag bearing a label "Masonry Cement" will be rejected, regardless of manufacturer's clarification letters stating Portland cement mixes have been packaged in general purpose labeled bags.

B. Hydrated Lime: Shall meet requirements of ASTM Designation C207, Type S.

C. Sand: Shall meet requirements of ASTM Designation C144, except no sand containing "slag" or components of "slag" shall be acceptable, and that the grading shall comply with the following limits:

Sieve Size	Percent Passing
No. 4	100
No. 8	95 to 100
No. 16	60 to 100
No. 30	35 to 70
No. 50	15 to 35
No. 100	2 to 15
No. 200	0 to 2

All sand for tuck pointing mortar shall pass No. 16 sieve.

D. Water: Shall be clean enough to drink and free from injurious amounts of oil, soluble salts, alkali, acids, organic impurities and other deleterious materials.

E. Admixtures: No air-entraining admixtures or cementitious materials containing air-entraining admixtures or agents shall be used in the mortar.

1. Antifreeze compounds, accelerators, retarders, calcium chlorides, water-repellent agents or other admixtures shall not be added to mortar, unless otherwise specified herein.

F. Mortar Color: Shall be obtained by the use of natural colored aggregates or metallic oxides. Mortar color shall be pre-mixed with portland cement in large controlled quantities to shade as approved by Architect. Manufactured packaged colored mortar mixes are acceptable provided they are composed of portland cement and lime. Masonry cements are unacceptable.

1. Color of mortar shall be consistent throughout work.
2. All exterior masonry work shall utilize color mortar. Mortar color shall match existing mortar color(s) as approved by the Architect.

G. Portland-Lime Mortar Blends: may be used at the Contractor's option in lieu of field mixing above specified portland cement and lime, acceptable products include the following: Type N and Type S Whitehall Satin Mortar Blend, as manufactured by Whitehall Cement Manufacturing Company, Whitehall, PA; Premixed Quikrete Eaglebond® Portland Cement/Lime (PCL) Type N and Type S; Riverton Flamingo Cement Color Mortar Blend by Capital Cement, Front Royal, VA; Glen-Gery Color Mortar Blend as manufactured by Glen-Gery, Wyomissing, PA; PCL 'N' and PCL 'S' by Cemex, Wampum, PA; or Masonry Mortar and Colored Masonry Mortar as manufactured by Spec Mix, Inc., Mendota Heights, MN.

1. Any manufacturer's bag bearing a label "Masonry Cement" will be rejected, regardless of manufacturer's clarification letters stating Portland cement mixes have been packaged in general purpose labeled bags.

2.02 TYPES OF MORTAR

A. Mortars are referred to by type in other sections of this specification. Mortar shall be mixed in the proportion set forth in Table l below. In lieu of mortar mixed in the proportions set forth in Table l, mortar will be accepted if certified data are presented showing that the mortar meets the requirements for minimum compressive strength as set forth in Table l. Certified data shall be the results of compressive strength tests of mortar mixed in the same proportions as are to be used in the work and tested in accordance with the requirements set forth in ASTM Designation C91.

TABLE I - TYPES OF MORTAR - ASTM C270

Mortar Type	Portland Cement	Hydrated Lime	Sand, Measured in a Damp, Loose Condition	Minimum Compressive Strength PSI
S	1	1/2	Not less than 2-1/4 and	1800
N	1	1	not more than 3 times the sum of the volumes of cement and lime used.	750

B. Quantities of Materials in Table l above are in parts by volume. If materials are to be measured by weight, use Table II to determine quantities:

TABLE II - WEIGHTS PER CUBIC FOOT

Materials	Pounds per Cubic Foot
Portland Cement	94
Hydrated Lime	40
Sand, Damp	80

C. Tuck Pointing Mortar: Shall be prehydrated Type N as specified above except that all sand shall pass a No. 16 sieve.

2.03 GROUT FOR REINFORCED MASONRY CONSTRUCTION

A. Grout shall comply with ASTM C476.

B. Materials:

Portland Cement	Comply with ASTM C150
Hydrated Lime	Type "S" ASTM C207
Aggregates	Comply with ASTM C404
Fine Aggregate	size - No. 1 (Sand)
Coarse Aggregate	size - Pea Gravel, maximum 3/8" (No. 10)

C. Grout Proportion by Volume:
PSI - 7 days, 1600 PSI; 28 days, 2500

Note: Grout mix with fine aggregate only is not permitted, unless approved by Architect.

Parts by Volume of Portland Cement	Parts by Volume of Hydrated Lime or Lime Putty	Aggregate, Measured in a Damp, Loose Condition	
		Fine	Coarse
1	0 to 1/10	2-1/4 to 3 times the sum of the volumes of the cementitious materials	1 to 2 times the sum of the volumes of the cementitious materials

Slump 8" to 12", as determined by ASTM C143 at time of placement.

The use of mortar in lieu of grout is not permitted.

PART 3 EXECUTION

3.01 MEASURING AND MIXING

A. Measurement of Materials: The method of measuring materials for the mortar used in construction shall be by either volume or weight, and such that the specified proportions of the mortar materials can be controlled and accurately maintained. Measurement of sand by shovel shall not be permitted.

B. Mixing Mortars: All cementitious materials and aggregate shall be mixed for at least 3 minutes and not more than 5 minutes in a mechanical batch mixer, with the maximum amount of water to produce a workable consistency.

C. Retempering: Mortars that have stiffened because of evaporation of water from the mortar shall be retempered by adding water as frequently as needed to restore the required consistency.

D. Add water to hydrated lime at least twenty-four (24) hours before mixing with other materials.

E. Tuck Pointing Mortar: Mortar shall be mixed with sufficient water to press into ball. Keep mortar in dampened condition for 1-1/2 hours. When ready for use, add enough water to bring to proper consistency, that is somewhat drier than conventional masonry mortar. Mortar shall be toned to match existing as near as possible.

3.02 MORTAR TYPE LOCATIONS

A. Type "S" mortar shall be used in the following kinds of masonry.
   1. Foundation walls of hollow units
   2. Concrete block in exterior walls (above grade) and bearing walls

B. Type "N" mortar shall be used for all face brick, and all other kinds of masonry not included in the above listing for the use of Type "S" mortar.
   1. Type “N” mortar shall be used for parging concrete masonry units before installation of masonry veneer.

2. Type “N” mortar shall be used for parging concrete masonry units below grade.

C. Use tuck pointing mortar for tuck pointing existing masonry.

3.03 USING OF MORTAR

A. Mortar shall be used and placed in final position within two hours after initial mixing. Discard all mortar not used within time limits noted. Discard all mortar that has stiffened because of chemical reaction (hydration).

3.04 PLACEMENT OF GROUT

A. Grout shall be placed by low lift method in accordance with NCMA-TEK 03-02A. High lift grouting methods are not permitted.

B. Grout shall be used and placed in final position within ninety minutes after initial mixing, unless otherwise approved by the Architect.

1. Time as specified above shall include time of hauling ready-mixed grout (grout transported in a mixer, agitator, or other transportation device).

END OF SECTION 040513

SECTION 042000 - UNIT MASONRY

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the unit masonry work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Concrete block (masonry units)
2. Face brick (including salvaged units)
3. Glazed face brick (including salvaged units)
4. Cast stone window sills
5. Accessories

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Mortar and Grout - Section 040513.

C. Rough Carpentry - Section 061000.

D. Thermal Insulation - Section 072100.

E. Sheet Metal Flashing & Trim - Section 076200. (Thru-wall Flashing)

F. Joint Sealants - Section 079200.

1.03 CODES AND STANDARDS

A. Conform to the following:
1. The Masonry Society's Specification for Masonry Structures (TMS 602), Latest Edition, regarding masonry tolerances.
2. Governing Building Code. Comply with all requirements of the governing building code that are more stringent than the above-referenced codes, standards and specifications.
3. National Concrete Masonry Association (NCMA) Technical Notes (TEK) and Technical Notes on Brick Construction by the Brick Industry Association.
   a. All masonry restoration work is to be performed in accordance with The Brick Industry Association's Technical Notes on Brick Construction, #46 (December 2005) Maintenance of Brick Masonry.
4. Masonry Designer's Guide based on Building Code Requirements for Masonry Structures (TMS 402) and Specifications for Masonry Structures (TMS 602), regarding expansion joints.
5. Extreme Weather Requirements: The Masonry Society's Specification for Masonry Structures (TMS 602), Latest Edition

B. Masonry shall conform to the above referenced codes, standards and specifications, except as modified by the Supplemental Requirements contained herein:

1. Permissible variations from level for bed joints as listed in paragraph 3.3 G.2a of the Specifications for Masonry Structures shall be modified as follows, “Bed joints may not vary more than ± 1/8” in 10’-0” or ± 1/4” total.”
2. Permissible imperfections in Finish and Appearance of load bearing concrete block units as listed in paragraph 7of ASTM Designation C90-14 shall be modified as follows:
    a. Paragraph 5.1, last sentence shall be modified to read as “Minor cracks incidental to the usual method of manufacture or resulting from customary methods of handling and in shipment and delivery shall not be grounds for rejection.” “Minor chipping” is not acceptable.
    b. Paragraph 7.1, modify to read as "No more than two and one-half percent (2½%) of the units in the shipment shall exhibit one or more of the characteristics described in 7.1.1 through 7.1.4 and 7.2."
    c. Paragraph 7.1.2, modify to read as "Units with finished face(s) containing chips not larger than 1/2 in. (12.7 mm) in any direction."
    d. Paragraph 7.1.3, modify to read as "Units with finished face(s) containing cracks not wider thanv0.02 in. (0.5 mm) and not longer than 25 % of the nominal height of the unit."
    e. Paragraph 7.1.4, modify to read as "Broken units are not acceptable.
    f. Paragraph 7.2, modify to read as “Where units are to be used in exposed wall construction, the face or faces that are to be exposed shall not show chips or cracks or other imperfections when viewed from a distance of not less than 10 ft. under diffused lighting.”
3. Permissible imperfections in Finish and Appearance of non-load bearing concrete block units as listed in paragraph 7of ASTM Designation C129-17 shall be modified as follows:
    a. Paragraph 7.1, last sentence shall be modified to read as “Minor cracks incidental to the usual method of manufacture or resulting from customary methods of handling and in shipment and delivery shall not be grounds for rejection.” “Minor chipping” is not acceptable.
    b. Paragraph 7.2, modify permitted percentage of shipment containing chips, as defined therein, to “2 1/2%” in lieu of “5%”.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.

C. Certificates: The contractor shall furnish certificates as noted below, prior to delivery of certified materials to project site. Each certificate shall be signed by manufacturer and shall contain name and address of General Contractor, project location and quantity, and date of shipment to which certificate applies. Certificates will be required for the following materials:

1. Certification that all masonry units comply with ASTM requirements as specified.
2. All certificates shall be submitted, reviewed, and determined “acceptable” by the Architect prior to the Pre-Installation Masonry Conference specified below.

D. Efflorescence Tests: Submit test reports certifying face brick meets or exceeds efflorescence requirements of ASTM C67.

E. Samples: All samples as listed herein shall be submitted immediately upon award of contract for selection by the Architect/Owner.

1. Submit to the Architect for approval, two or more sets of sample panels of the face brick specified, which shall be typical of the extremes of color and texture to be furnished. Note: The existing brick, or portion thereof, shall be cleaned as hereafter specified, prior to submitting brick samples for approval.
2. Submit samples of cast stone for Architect's approval.

F. Cold Weather Masonry Construction Protection Plan: Contractor shall submit to the Architect for review the Contractor's proposed cold weather masonry construction protection plan. Submittal shall be made prior to the Pre-Installation Masonry Conference specified below, and a minimum of one (1) month prior to cold weather masonry construction.

1.05 QUALITY ASSURANCE

A. Prior to commencing with any on-site masonry work, a Pre-Installation Masonry Conference shall be held at the job site. All masonry submittals, including required certificates, shall be complete and approved and/or reviewed as acceptable by the Architect prior to this meeting. In addition to the Project Architect, the General Contractor, and his masonry superintendent shall attend the Pre-Installation Masonry Conference along with the building Owner's Representative. The purpose of this meeting shall include a discussion on the first-class quality expectations of the Architect/Owner regarding masonry work and the Contractor's intent to provide same.

B. All masonry work shall be performed by masonry craftworkers who have successfully completed courses through the International Masonry Institute (IMI) or the Masonry Contractor's Association of America (MCAA). The Contractor shall provide first class quality masonry work to meet the Architect's and Owner's expectations.

1.06 STORAGE OF MATERIALS

A. All materials, upon delivery to the site, shall immediately be stored free off the ground and protected from the weather by tarpaulins or other suitable and approved means.

1.07 JOB CONDITIONS

A. Protection of Work: During erection, cover top of walls with heavy waterproof sheeting at end of each days' work. Cover partially completed structures when work is not in progress. Extend cover a minimum of 24" down both sides and hold cover securely in place. Cold weather protection shall be as hereafter specified.

B. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns.

C. Do not apply concentrated loads for at least 3 days after building masonry walls or columns. During erection, walls shall be adequately braced.

D. Staining: Prevent grout or mortar from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

E. Protect sills, ledges and projections from droppings of mortar.

1.08 SCAFFOLDING

A. The Contractor shall furnish, install and maintain, as long as necessary and remove when no longer required, safe and adequate scaffolding, centering and other items for the proper execution of his work.

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete Masonry Units:
1. Standard Concrete Masonry Units: Shall be of Modular Size, 2 core (block webs may require modifications at all reinforced masonry locations), and shall be in sizes required to complete work as shown. Units shall be of same manufacture, composition, size and appearance, and shall be cured by same process throughout the job. Units shall be sound and free from cracks, chip, surface blemishes, or other defects that would interfere with their proper setting or impair strength, appearance, or durability of construction. Units shall be square and true and have two finished faces. Units shall be free of any deleterious matter that will stain plaster or corrode metal; shall be adequately cured before shipment; shall be delivered to job site in an air dry condition as determined by tests hereafter specified.
   a. 3 core block is acceptable if available.
   b. All concrete masonry units, except as otherwise detailed, shall be 7-5/8" x 15-5/8" face by thickness required and be square and true without chips or surface blemishes; and have two finished faces.
      1) Concrete brick, if used for bearing, shall be of modular size 3-5/8" x 7-5/8" x 2-1/4".
   c. Provide all special block required for closer, jamb units, headers, fractional block, corner blocks, pier blocks, etc. Exposed external corners shall be bull nosed, [except for window jambs], unless otherwise noted. Certain block areas shall receive solid block where block is projected into the room and/or for top of low walls.
   d. Light weight concrete masonry units shall be used for all interior locations above finish floor, except bearing walls.
2. Standards:
   a All concrete masonry units shall have a f'_m of 1,500 psi or 2,000 psi, unless otherwise noted.
   b. Block to meet ASTM Designation C90, Grade N, Type 1 for solid and hollow load bearing units.
   c. Block to meet ASTM Designation C129, Grade N, Type 1 for hollow non-load bearing unit, unless otherwise noted.
   d. Concrete brick to meet ASTM Designation C140, Type I.
   e. Aggregate for standard concrete masonry units shall be manufactured from sand and gravel aggregates or crushed limestone. Concrete masonry units containing slag will not be accepted. Aggregates shall conform with ASTM Designation C33.
   f. Aggregate for light weight concrete masonry units shall be manufactured from expanded shale, clay or slate aggregates in conformance to ASTM C331-17. Concrete masonry units containing slag will not be accepted. Weight-pounds per cubic foot of concrete shall not exceed ninety (90) pounds.
   g. The concrete masonry manufacturer shall submit to the Architect test reports from an independent testing laboratory verifying that all concrete masonry units to be furnished on

this project comply with the specified standards.

B. Face Brick (generally exterior): Shall be select, conforming to ASTM Specification, C216, Grade SW, Type FBS (normal range of size and color variation). Provide solid face brick for first course on lintels, top and bottom courses at recesses and/or projections, corbels and other locations as shown on drawings. Provide special shapes and sizes as required and/or detailed on drawings.

1. Face brick shall be in size, color(s) and texture to match existing as approved by the Architect.
2. Existing face brick removed to accommodate new construction shall be salvaged for re-use to the greatest extent possible. Damaged face brick shall not be re-used.

C. Interior Glazed Brick: Shall be select, conforming to ASTM Specification, C-216, Grade SW. Glazed brick units shall be manufactured with baked-on ceramic glaze surface. Provide solid brick for first course on lintels, top and bottom courses at recesses and/or projections, corbels and other locations as shown on drawings. Provide special shapes and sizes as required and/or detailed on drawings.

1. Interior Glazed Brick shall be in size, color, and texture to match existing as approved by the Architect.
2. Existing glazed brick removed to accommodate new construction shall be salvaged for re-use to the greatest extent possible. Damaged face brick shall not be re-used.

D. Cast Stone: Architectural Cast Stone shall comply with ASTM C1364; mix shall consist of Portland cement, coarse and fine aggregates, color pigments, admixtures (including but not limited to air-entrainment and integral water repellent), and water. Color shall match approved sample as selected by Architect. All surfaces intended to be exposed to view shall have a fine-grained texture similar to natural stone, with no air voids. Shape(s) as indicated on the drawings; sills shall project minimum 1/2", unless otherwise detailed, beyond face of wall below and include drip.

1. Cast stone products complying with these specifications, as manufactured by Reading Rock (Rock Cast), Cincinnati, OH; Custom Cast, Westfield, IN, and/or Royal Stone as represented by RL Brown Associates, Inc., Erie, PA; Advanced Cast Stone, Inc., Guthrie, OK; Midwest Cast Stone, Kansas City, KS; Sun Precast Co., McClure, PA; and/or Edwards Cast Stone Co., Dubuque, Iowa; are approved for bidding.

E. Masonry Accessories:

1. Where the following items are specifically noted by a manufacturer, specified product number/manufacturer is used for bidding purposes only. Products, conforming to these specifications and meeting Architect's approval, as manufactured by the following manufacturers, shall be considered for bidding this Project:
   Heckmann Building Products, Inc., Chicago, IL
   AA Wire Products Company, Chicago, IL
   Hohmann & Barnard, Inc., Hauppauge, NY
   National Ty-Wal Masonry Products, subsidiary of National Wire Products Industries, Inc., Toledo, OH
   Wire-Bond, Masonry Reinforcing Corporation of America, Charlotte, NC
   Southern Construction Products, Inc., Birmingham, AL
2. All ferrous steel products to be incorporated in exterior walls including the inner wythe shall receive hot dipped galvanized finish coating of 1.50 ounce zinc in accordance with ASTM A153 - Class B-2. Ferrous steel products to be incorporated in interior walls shall have a minimum .40 ounce zinc coating in accordance with ASTM A641 - Class 1. Galvanizing shall be done after fabrication of items.

3. Corrugated Masonry Veneer Ties for anchoring to existing masonry construction: Shall be Heckmann No. 187 or #345 Corrugated Buck Anchor by Hohmann & Barnard. Ties shall be 14 gauge x 1-1/4" steel corrugated with 1-1/2" bend. Total length shall be as required for wall thickness.

   OR

   Masonry Veneer Anchors for anchoring to existing concrete masonry units: Shall be DW-10HS as manufactured by Hohmann & Barnard, consisting of two pieces: DW-10HS 14 gauge hot dipped galvanized bent plates to anchor to existing masonry and 3/16" diameter hot dipped galvanized VWT wire tie x length as required to span into veneer. Anchor fasteners to existing masonry with fasteners as recommended by manufacturer. DW-10HS allows wire ties to be adjusted vertically.
4. Control Joint Anchors:
   a. Corrugated Control Joint Anchor: Shall be Heckmann Corrugated No. 351 or Corrugated Control Joint Anchor by Hohmann & Barnard. Anchor shall be 24 gauge steel, 6-1/4" long and 1" wide. Corrugated control joint anchor shall be used in masonry veneer control joints and minor interior concrete masonry unit partition control joints not indicated to receive Z type anchor or rubber control joint.
   b. Concrete Masonry Unit Wide Rubber Control Joint (interior walls, except corners): Shall be RS 12 (11 1/8" wide) or RS 8 (6 7/8" wide) by Hohmann & Barnard, dependent upon thickness of CMU. Control joint shall be a factory molded product of rubber conforming to ASTM D2000 2AA-805 with durometer in accordance with ASTM D2240.
   c. Concrete Masonry Unit Control Joint Anchor (at corner locations): Shall be Heckmann No. 350. Slotted steel anchor shall be 12" long x 3" wide x 1/8" thick with 2" bend; complete with ½" diameter x 6" long steel L-rod. Grout core with rod solid.
5. Masonry Veneer Adjustable Assemblies for anchoring to new masonry backup construction: Shall be 270 Ladder Eye-Wire as manufactured by Hohmann & Barnard. The assembly shall consist of extra heavy (3/16" side rods x 9 gauge cross rods) ladder reinforcing for the interior wythe with 3/16" diameter adjustable tie eye sections welded on at 16" centers. Rectangular adjustable wall tie pintle sections (3/16" diameter) shall complete the assembly. Size of assemblies shall be as required for wall construction. Pintles shall be SH-Seismic Hook with continuous 3/16" diameter wire through veneer.
6. Ladder Type Wall Reinforcement: Shall be as manufactured from cold drawn steel wire conforming to ASTM A951 / A951M Standard Specification for Steel Wire for Masonry Joint Reinforcement, and shall consist of two deformed longitudinal rods welded at 16" intervals to perpendicular cross rod forming a ladder design. Longitudinal rods shall be 3/16" and cross rods shall be not less than No. 9 gauge. Pre-fabricated or job fabricated corner and tee sections shall be used to form continuous reinforcement around corners and for anchoring abutting walls and partitions. Width shall be as required for wall thickness.
7. Mortar Net for Cavity Walls: Shall be 1" thick by 10" high mesh, of high density polyethylene or nylon strands woven into a 90% open mesh as manufactured by Mortar Net USA, Ltd, Highland, Indiana. Additional acceptable products: Hohmann & Barnard's Mortar Trap; and Advanced Building Products' Mortar Break DT.
8. Cavity/Weep Ventilators: Shall be QV Quadro-Vent by Hohmann & Barnard, flexible, ultraviolet resistant polypropylene co-polymer. Color as selected by Architect. Mortar Maze weep/cell vents by Advanced Building Products, Inc., are also acceptable.
9. Vertical Reinforcement Bars: As specified in Section 033000
10. Grout Stop Mesh: Heckman No. 267 Plastic Mesh Wall Tie; MGS Mortar/Grout Screen by Hohmann & Barnard; or Grout Catch by Advanced Building Products, Inc. 1/4" x 1/4"

monofilament material, corrosion proof and biologically inert.

11. Thru-wall flashing: as specified in Section 076200.
12. Masonry Cleaner: Alter masonry cleaner as required to achieve desired results.
    a. New Masonry Cleaner: Note: verify masonry cleaner to be used on masonry units manufactured with an integral water repellent with the masonry unit manufacturer for compatibility.
        1) Sure Klean 600 Detergent or SK Vana Trol as manufactured by PROSOCO Inc., Kansas City, KS; or
        2) 202 New Masonry Detergent or 202V Vana-Stop New Masonry as manufactured by Diedrich Technologies; or
        3) 1203 Emulsifiable Solvent Cleaner and/or 1201 Citrus Cleaner/Degreaser as manufactured by ChemMasters; or
        4) NMD80 as manufactured by EaCo Chem, Forestville, PA.
    b. Restoration Cleaner:
        1) Sure Klean Light and/or Heavy Duty Restoration Cleaner as manufactured by PROSOCO Inc., Kansas City, KS; or
        2) 101 Masonry Restorer and/or Envirestore 100 as manufactured by Diedrich Technologies; or
        3) 1203 Emulsifiable Solvent Cleaner and/or 1202 Heavy Duty Cleaner/Degreaser as manufactured by ChemMasters; or
        4) OneRestore as manufactured by EaCo Chem, Forestville, PA.

PART 3 EXECUTION

3.01 WORKMANSHIP

A. Masonry shall not be erected when, in the opinion of the Architect, the sun, heat, wind or limitations of facilities furnished by Contractor prevent proper setting and curing of mortar joints or obtaining proper bond in mortar. Units having a film of water or frost on its surface shall not be laid in walls. Masonry will be laid plumb, true to a line, with level and accurately spaced courses and with each course breaking joints with course next below, unless otherwise shown or specified. Bond pattern shall be kept plumb throughout. Corners and reveals shall be plumb and true. Courses shall be so spaced that backing masonry will level off flush with face work. Spaces around metal door frames and other built-in items shall be solidly filled with mortar. Anchors, wood blocking, accessories, flashings and other items required to be built into masonry shall be built as the work progresses. Cutting and fitting of masonry shall be done with masonry saws.

B. Unfinished work shall be stepped back for jointing with new work; toothing may be resorted to only when specifically approved. Before new work is started, all loose mortar shall be removed and exposed joints thoroughly cleaned.

1. All masonry infill and/or new wall construction shall be toothed into existing masonry construction.

C. Contractor shall place all lintels, access panels, and louvers as shown on plans and as provided under other divisions of these specifications, or under other contracts.

D. All lintels and masonry supports shall be shored to support dead load until mortar has sufficiently set to "Pyramid" the imposed masonry load over the supported span. Shoring shall maintain the lintels in a straight plane.

E. Chases for heating, plumbing and electrical ducts, pipes and conduits shall be built into masonry walls as detailed with clearances as shown on drawings to be considered generally as maximum.

F. Door frames, wood grounds, windows, blocking shall be built solidly into the masonry and anchored. Material, unless otherwise noted, will be provided as called for in other sections of these specifications.

G. Care shall be taken during erection of cavity walls to keep the cavity clear. All mortar falling into the cavity shall be removed. Wood battens, in size to fit cavity air space, shall be used to prevent mortar from falling into or projecting into cavity. Place on installed adjustable wall ties, lay succeeding courses of masonry up to next location of wall ties, carefully raise batten with accumulated mortar, discard mortar and repeat procedures.

3.02 COLD WEATHER INSTALLATION

A. Exterior masonry work shall not occur when cold or inclement weather prohibits the proper laying and curing of masonry work. Extreme weather requirements for masonry work shall be as hereafter specified and as listed in TMS 602.

1. Primary objectives include, but not limited to:
    a. Maintenance of mortar temperatures between 40° F and 120° F at time of mixing.
    b. Produce grout temperatures between 70° F and 120° F at time of mixing.

B. Preparation:

1. If ice or snow has inadvertently formed on masonry bed, it shall be thawed by application of heat. Apply heat carefully until top surface of the masonry bed is dry to the touch.
2. Any section of masonry deemed frozen and damaged shall be removed before continuing construction of that section.
3. Use dry masonry units. Wet or frozen masonry units shall not be laid.
4. Air temperature 40° F to 32° F: Sand or mixing water shall be heated to produce mortar temperatures between 40° F and 120° F.
5. Air temperature 32° F to 25° F: Sand and mixing water shall be heated to produce mortar temperatures between 40° F and 120° F. Maintain temperatures of mortar on boards above freezing.
    a. Heat grout aggregates and water, keeping grout above 70° F.
6. Air temperature 25° F to 20° F: Sand and mixing water shall be heated to produce mortar temperatures between 40° F and 120° F. Maintain mortar temperatures on boards above freezing. Salamanders or other sources of heat, and enclosures, shall be used on both sides of walls under construction. Windbreaks shall be employed when wind is in excess of 15 mph.
    a. Heat masonry to 40° F prior to grouting.
7. Air temperature 20° F and below: Sand and mixing water shall be heated to produce mortar temperatures between 40° F and 120° F. Enclosure and auxiliary heat shall be provided to maintain air temperature above 32° F. Temperature of units when laid shall be not less than 20° F.

C. Protection requirements for completed masonry and masonry not being worked on:

1. Mean Daily Air Temperature 40° F to 32° F: Masonry shall be protected from rain or snow for 24 hours by covering with weather-resistive membrane.
2. Mean Daily Air Temperature 32° F to 25° F: Masonry shall be completely covered with weather-resistive membrane for 24 hours.

3. Mean Daily Air Temperature 25° F to 20° F: Masonry shall be completely covered with insulating blankets or equally protected for 24 hours.
   a. Increase to 48 hours for grouted masonry.
4. Mean Daily Air Temperature 20° F and Below: Masonry temperature shall be maintained above 32° F for 24 hour by enclosure and supplementary heat, by electric heating blankets, infrared heat lamps or other approved methods.
   a. Increase to 48 hours for grouted masonry.

D. Contractor shall submit his proposed cold weather masonry construction protection plan as specified in Paragraph 1.04.F of this Section.

3.03 PROVISIONS FOR OTHER TRADES, WORK, ETC.

A. Provisions for pipes and conduits shall be as follows:
1. The Contractor shall examine the drawings and specifications for work of other trades especially for Plumbing, Heating, Food Service Equipment and Electrical Work. In laying out his work he shall make provisions for the installation of all sleeves, pipes, conduits, boxes, inserts, hangers, and work of other trades and shall be done in such manner that the construction will not be weakened.
2. The Contractor shall furnish such labor and material for his part of the work to make it conform to the work of other trades or contractors.
3. Sleeves, bolts, sockets, etc., required by other trades or contractors shall be placed by them but this contractor shall maintain the position of all such inserts until the masonry is placed.

B. Reglets, Ties, Inserts and Anchors: This contractor shall set and embed reglets, anchors, inserts, ties, furnished by other trades or Contractors for the attachment of other materials. Coordinate locations of all such items with trades or Contractors furnishing the materials.

C. All contractors whose work is related to the masonry or must be supported by it, shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

3.04 ADJUSTABLE COLUMN AND BEAM TIES

A. Anchors shall be welded to column and beam webs and flanges as required for installing ties a maximum 16" on center vertically and a maximum 16" horizontally.

3.05 MASONRY VENEER ADJUSTABLE ASSEMBLIES (MASONRY BACK-UP)

A. Shall be installed in cavity walls placed 16” on center, and in the first and second bed joints 8” apart immediately above lintels and below sills at openings unless otherwise noted. Prefabricated sections shall be used at corners and at abutting walls. Side rods shall be lapped a minimum of 6” at splices.

3.06 REINFORCEMENT

A. Ladder Type Reinforcement: Shall be installed in full wythe non-cavity masonry walls and/or full multiple wythe non-cavity masonry walls (veneer(s) and back-up masonry). Reinforcement shall be installed beginning 8” above concrete footers and in bed joints at 16" intervals for the entire height of the wall except reinforcement shall be installed in the first and second bed joints, 8” apart, immediately above

lintels and below sills. Side rods shall be lapped 6" at splices. Reinforcement shall be so placed as to assure 5/8" mortar cover measured from outside face of mortar joint.

B. Vertical Reinforcement Bars: Shall be as specified in Section 033000. Install where detailed on drawings; grout cores of masonry units solid.

1. Placing Reinforcement: Comply with requirements in TMS 602.
   a. "Wet-sticking" of vertical reinforcement into freshly poured grout is not permitted.
2. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure. Note: high lift grouting is not permitted, grout lift heights are limited to 4'-0".
3. Comply with requirements in TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

3.07 FLASHINGS

A. Place all flashings in an approved manner and as shown on the drawings. All surfaces to receive flashing shall be dry, clean and reasonably smooth. On horizontal surfaces, the flashing shall be embedded in mortar or have a trowel coat of approved mastic. Other than horizontal surfaces receiving the flashing, the flashing shall be spotted with mastic to hold the flashing in place during construction. Each joint shall be lapped 4". Install prefabricated flashing corners at all building corners and/or offsets.

1. Flashing shall be laid on a bed of York's UniverSeal polyether sealant (or equal) and topped with a fresh full bed of mortar. Flashing shall be set flush with the exterior masonry.

B. Install thru-wall flashing (Section 076200) in cavity wall bases, veneer wall bases, under window sills and/or coping stones, over heads of openings (lintels) and other locations as required and/or as detailed on drawings.

1. Flashings for lengths of long walls shall be minimum 10'-0" to 12'-0" lengths (series of short lengths of flashings will not be acceptable).
2. Flashings shall be continuous for lengths of walls, including, but not limited to, across steel columns exposed in exterior concrete masonry unit wall construction.
3. All laps/penetrations in flashing shall be sealed with products acceptable to flashing manufacturer to provide complete flashing assembly.

C. End Dams: Where the flashing is not continuous, such as over and under openings in the wall, the ends of the flashing should be extended beyond the jamb lines on both sides and should be turned up into the head joint several inches at each end to form a dam.

1. Note: voids in masonry units at door or window jambs, and other openings/penetrations through walls, shall be filled solid with grout as specified above.

D. Door and window openings in exterior masonry wall construction shall be flashed as specified in Section 072500.

3.08 WALL DRAINAGE SYSTEM

A. Place MortarNet in wall cavities resting on through-wall flashing at base of walls, above window and door openings and all other locations where through-wall flashing and ventilators are built into the exterior walls.

3.09 PARGING

A. Back-up material for cavity walls shall be laid in advance of exterior face brick and the back up shall be parged with setting mortar a minimum of 1/4" thick.

B. The exterior face of exterior foundation walls below grade shall be parged with setting mortar a minimum of 1/4" thick.

3.10 CONTROL AND EXPANSION JOINTS

A. Provide vertical expansion and control joints in masonry where shown on drawings, or if not shown, install joints to comply with recommendations by National Concrete Masonry Association (NCMA TEK 10-2C) and Masonry Designer's Guide based on Building Code Requirements for Masonry Structures (TMS 402) and Specifications for Masonry Structures (TMS 602). Build-in related masonry accessory items as the masonry progresses. See Section 079200 for sealant requirements. General recommendations include but are not limited to the following:

1. Changes in wall height
2. Changes in wall thickness
3. At movement joints in foundations and floors
4. At movement joints in roofs and floors that bear on walls
5. Near one or both sides of door and window openings: one side for openings less than 6'-0 wide and both sides for openings 6'-0 and over.
6. Near corners of walls, typically 4'-0 from each corner, unless detailed otherwise; maximum distance from corner to be ½ the horizontal spacing of the vertical control joints along the rest of the wall.
7. Maximum 4'-0 from exterior wall in intersecting load bearing interior walls.
8. At intersection of exterior wall with non-load bearing interior walls. (on integral footers)
9. For walls without openings or other points of stress: install joints at approximately 1 ½ times the wall height, not to exceed 25'-0 centers, except veneers shall not exceed 20'-0 centers.

3.11 CAVITY AND WEEP VENTILATORS

A. Install cavity ventilators in masonry cavity walls in vertical brick joints 32" on center and within 24" from top of cavity, or as otherwise shown on drawings.

B. Install weep ventilators in masonry cavity walls in vertical brick joints 24" on center above all thru-wall flashing.

3.12 LAYING BRICK

A. Each brick shall be laid in a full level bed of mortar, not furrowed. Trowel ends of structure brick full of mortar and shove into place. Fill all joints and interstices in masonry and joints next to other materials.

B. Bond:

1. Bond of brick facing shall be laid to match existing.
2. The bond of brick facing shall be laid out and adjusted to each wall space so that no course shall finish at an external corner or at a jamb with a piece less than 3-3/4" long. Bond of each course

at the jambs of each opening shall be symmetrical. Maintain bond pattern throughout. Jumping of bond pattern will not be approved.

C. Anchoring face brick:
1. Anchoring to existing masonry back-up material shall be corrugated ties as specified to suit wall thickness.
2. Face brick in non-cavity walls shall be bonded to back-up block with ladder type wall reinforcement.
3. Face brick in cavity walls shall be bonded as follows:
a. To concrete block back-up walls with masonry veneer adjustable assemblies.

D. All exterior face brick shall be laid from outside scaffolds.

E. Joints: Unless otherwise shown on drawings, finish joints in exterior brick facing with a concave joint to compact mortar into joints, force it tight against brick and close all hair cracks and crevices. Finish joints after mortar has attained its initial set.

F. Joints in brick facing shall be 3/8” wide unless otherwise shown on drawings or otherwise required to suit coursing. Variations in width of vertical joints shall be inconspicuous and made only as necessary to obtain the bond.

G. Lay a minimum of three courses of face brick or concrete brick 24" wide under all masonry bearing steel beams and/or joists. Grout bearing solid or use solid block under lintel bearing locations.

H. Install solid brick first course on lintels, top and bottom courses at recesses and/or projections and other locations as shown on drawings.

I. Chipped face brick, installed, shall not exceed one-half (1/2) the tolerances of Type FBX face brick according to ASTM C216.

3.13 LAYING CONCRETE MASONRY UNITS

A. Do not wet concrete masonry units before laying. Unless otherwise shown or specified, lay units with vertical joints centering over units in course below. Mortar joints, both head and bed, shall be 3/8” wide, ± 1/16”. Concrete masonry units shall be full-bedded under both face shells and webs. Joints in exterior walls shall have full mortar coverage on horizontal and vertical face shells. Units terminating against soffits of beams or slab construction shall be wedged tight with slate wedges, and the joint flushed full with mortar. Jamb units shall be of shapes and sizes required to bond with wall units and shall be built in where shown or required. All wall intersections shall be masonry bonded, or bonded at 16" o.c. with specified concrete masonry unit anchors, unless detailed otherwise. Ends shall be grouted solid in place. No cells shall be left open in face surfaces. Masonry unit walls or partitions supporting plumbing or heating fixtures or other items, voids at door or window jambs, and other spaces requiring fill shall be filled solid with grout mixed to pouring consistency and/or setting mortar. Lengths of walls shall be laid out for openings and piecing. Pieces shall be kept to a minimum. Corners shall be laid up in advance of field, string shall be stretched to ensure level joints and accuracy of vertical coursing and dimensioning.
1. All voids/penetrations/edges/joints/etc. shall be sealed for air tightness.

B. Concrete masonry units shall be laid from the exposed, finished side. All cutting shall be done with

masonry saws.

C. Cores of all concrete block units, spaces between concrete block units, and other such cavities of all concrete block units in the top course of all walls shall be grouted solid.

D. Install masonry accessories as herein specified.

E. For exterior face brick veneer walls: Install cavity wall insulation specified in Section 072100. Insulation shall be held snug to parging by hook portion of adjustable assemblies.

F. All masonry walls, except as otherwise noted, shall extend to the underside of deck or beams. The space between flutes or other small openings shall be sealed with setting mortar.

G. Mortar joints on the outside of the exterior walls and on all exposed-to-view or painted interior walls and partitions shall be concave tooled against the edges of the units except as hereafter specified.

H. Surfaces receiving tile backer board shall be laid to present a true even plane. All mortar fins or spots shall be cut from face of block, ready to receive finish material. Strike all joints flush. Apply a thin coat of cement mortar over wall surface to obtain a smooth level surface for application of wall finish material. All locations indicated to receive ceramic wall tile shall have tile backer board adhered to the masonry prior to application of tile.

I. Imperfections in finish and appearance of installed, exposed concrete block shall not exceed the modifications specified in Paragraph 1.03.B of this Section to referenced ASTM Standards.

J. Masonry inspection cleanouts shall be provided at the base of walls where vertical steel reinforcement has been installed.

3.14 REPAIR, POINTING AND CLEANING - NEW CONSTRUCTION

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. At completion of work, all holes in joints of exposed masonry surfaces shall be filled with mortar and suitably tooled. Keep weep holes open. After pointing has set and hardened, all surfaces shall be cleaned with specified light duty masonry cleaner or masonry cleaner as approved by the brick manufacturer. Apply in strict conformance to manufacturer's printed directions.

1. All surfaces adversely affected by cleaning materials which may come in contact with cleaning materials shall be protected, including plant life.

3.15 RESTORING, TUCK POINTING, AND CLEANING - EXISTING MASONRY

A. Preparation for exterior masonry restoration: As specified in Section 024200, the General Contractor shall remove all existing vegetation (vines, weeds, plants, etc.) from the building’s façade/envelop.

B. All existing exposed brick (interior and/or exterior) shall be restored to original or better condition. Restoration shall include, but not be limited to, removing damaged cracked/chipped units and installing new units according to the preceding paragraphs, tuck pointing damaged mortar as hereafter specified, and cleaning as hereafter specified. Additionally, restoration work shall include, but may not be limited to, the following:

1. All former abandoned wall penetrations shall have all broken, partial brick units removed and openings infilled with brick to match existing.
2. Cleaning of all interior exposed glazed brick shall include removal of paint splatters, runs, overspray, etc.
2. Existing masonry (interior and/or exterior) damaged and/or affected by work of this Project.
4. Cleaning and re-caulking existing masonry control joints shall be as specified in Section 079200.

C. Removal/replacement of damaged cracked/chipped brick/masonry units:

1. Brick/masonry units that are broken, heavily spalled or that have been damaged in the tuck pointing process shall be replaced by the Contractor. Affected units are to be removed and all mortar surrounding the affected units is to be removed taking care to be sure that debris from the removal does not fall into the cavity between brick wythes. All dust and debris in the area where the units were removed is to be removed by brush or compressed air.
2. Masonry surfaces in the area where new units are to be placed shall be dampened first, but not with more water than the brickwork can absorb. Surrounding brickwork and the new bricks shall be buttered with mortar and the replacement brick centered in the opening and pressed into position. Mortar shall be added to the joints between brick units as necessary to ensure full head and bed joints. Excess mortar shall be removed with a trowel and when thumbprint dry the mortar joint shall be tooled to match original joint profile.
   Installation of new units shall be in accordance with preceding paragraphs.

D. Tuck Pointing:

1. All defective joints shall be cut out approximately 3/4" deep with power tools or by hand. Defective joints are mortar joints in which the mortar is loose, missing, eroded, powdered, broken or soft.
   a. Power tools may be used to remove old mortar providing the process does not damage the brick being tuck pointed. If the use of power tools to remove old mortar damages the brick, the Contractor shall be required to replace damaged brick with new brick as herein specified.
2. After joints are cut out, using care not to damage masonry, joints shall be flushed out with water, by brushing, and/or compressed air to remove all dust and debris from the joint.
3. Joints to be tuck pointed shall be dampened, but not more than can be absorbed by the brickwork. Water is to be added to the standing pre-hydrated mortar to bring it to a workable consistency slightly drier than conventional mortar.
4. Mortar is to be packed tightly into joints in thin layers of 1/4”, maximum, with each layer becoming “thumbprint” hard before applying the next layer. Joints shall be tooled to match original joint profile after the last layer is thumbprint hard.
5. After pointing is completed and mortar sufficiently hardened, the surfaces shall be cleaned.

E. Cleaning existing masonry:

1. Existing masonry shall be cleaned. Work includes, but may not be limited to:
   a. Existing exterior masonry.
   b. Existing masonry (interior and/or exterior) affected by work of this Project.

c. Clean all interior masonry before applying finish painting as specified in Section 099000. Coordinate with finish painting manufacturer regarding compatibility of cleaning products and procedures with finish paint products.

2. Prior to submitting brick samples for approval, as specified in Paragraph 1.04.E, the Contractor shall clean sample areas of exterior and interior exposed brick for review by the Architect and to determine selection of matching materials.
3. General Cleaning:
   a. Cleaning products and/or procedures shall be altered, if required, to achieve the desired results.
   b. Use light duty cleaner for all possible locations. Use of heavy duty cleaner shall be restricted to removal of paint, carbon build up, atmospheric pollutants and similar problem areas.
   c. Use of strong acid cleaning agents or sandblasting will not be permitted in the work.
4. All cleaning solutions shall be used in strict adherence to manufacturer's printed instructions, including but not necessarily limited to preparation, application and cleanup. All cleaning solutions shall be used in strict compliance with any and all Environmental agency requirements and all governing local, state and federal regulations.
5. All surfaces adversely affected by the cleaning materials which may come in contact with cleaning materials shall be protected, including plant life.
6. All entrances, exits, and other openings to the other portions of the building shall be sealed to prevent cleaning solutions and water from entering other portions of the building.
7. All storm water inlets shall be sealed to prevent cleaning solutions and water from entering the storm water sewer system.

3.16 EFFLORESCENCE

A. Should any efflorescence occur on the masonry surfaces during the one year maintenance bond period, the efflorescence shall be removed with a cleaning agent manufactured explicitly for this purpose and approved by the Architect.

END OF SECTION 042000

SECTION 054100.5 – COLD FORMED STRUCTURAL SECTIONS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the cold formed structural section (Z purlin) work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner, including, but not limited to the following:

1. Z Purlin cold formed structural sections, including bracing/bracketing/anchoring to the building structure.
2. All shop and field welding required for proper connecting and for securing cold formed structural sections to the surrounding construction.
3. Touch-up painting of all shop and field welds.

B. Framing Contractors/Fabricators shall submit any proposed changes in design content to the Project Engineer for review at least ten working days prior to time for receipt of bids. Any proposed changes shall be submitted with the “Substitution Request Form” from Section 012513.25, according to requirements of Section 012513. The Substitution Request Form shall be accompanied with all documentation required by herein specifications (i.e., layouts, loading, design calculations, etc.). All substitution documentation shall be stamped and sealed by a Registered Engineer; registration shall be in the State of the Project Site.

1. Substitutions will not be considered after bidding. Substitutions submitted on Shop Drawings without above prior approval will be rejected.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

1.03 STANDARDS AND REGULATIONS

A. The materials, design, fabrication and erection shall be in accordance with the latest adopted specifications of the following organizations.

1. ANSI/SDI AISI S100-2024 *North American Specification for the Design of Cold-Formed Steel Structural Members.* (replaces American Iron and Steel Institute (AISI) S100: North American Specification for the Design of Cold-Formed Steel Structural Members, 2012 or 2016 Edition.)
2. American Welding Society (AWS) D.1.3 "Structural Welding Code - Sheet Steel."
3. All pertinent Federal, State and Local codes.
4. The design and installation of members in cold-formed steel light-frame construction shall be in accordance with AISI S200 and IBC 2021 Section 2211 as applicable.

B. Exterior and load bearing framing shall comply with ASTM C955. Metal framing shall be manufactured to meet minimum base metal thickness stated in mils, decimal inch, and/or millimeters as specified herein (not gage).

C. In case of conflict between any of the above referenced specifications, the more stringent requirements shall govern.

D. In case of conflict between the above referenced specifications and the project specifications, the project specifications shall govern.

1.04 QUALITY ASSURANCE

A. Contractor shall provide effective full-time quality control over all fabrication and erection activities.

B. Employ only welders who qualify for the work they are to do by tests as prescribed in the "Standard Code for Arc and Gas Welding in building Construction" of the American Welding Society and shall submit certification of such qualifications to the Architect prior to beginning of this work.

1. Certifications of qualifications of welders from a recognized agency whose test procedures and requirements are at least equal to those of the American Welding Society may be acceptable to the Architect.

C. Downsizing of herein specified minimum base metal thicknesses and/or member size by the professional engineer ‘s design will not be permitted.

D. Support framing for all wall/roof mounted or supported equipment shall be coordinated with trade furnishing equipment and designed for applicable loads, including Owner furnished equipment.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop drawings shall be submitted to meet requirements of applicable portions of General Conditions.

C. The shop drawings shall show plans and sections of all installations, including complete large scale details of all typical and special conditions of construction; clearly indicating materials, sizes, shapes, sections, gauges, thicknesses, and finishes of all members, and clearly indicating all materials and methods used in the connection and anchoring of the work; design, locations and spacing of all shop and field welds; design of bracing and bracketing; anchorage; support framing; installation tolerances; electrolytic isolation; and all other pertinent details.

D. Contractor shall be responsible for proper dimensions and locations of all work and the approval of shop drawings will not relieve the contractor of responsibility for proper location of all work and the furnishing of all material required whether shown or not on the drawings.

E. Notify the Architect immediately of any errors or discrepancies in dimensions or details between the various drawings and parts of the work and do not proceed until the Architect has approved any necessary changes.

F. Samples: Submit representative samples of all steel framing components to Architect for approval,

G. Do not order materials or begin fabrication or installation until Architect's processing of submittals has been completed.

H. Furnish necessary prints of approved drawings for erection purposes and for the work of subcontractors whose work is related to the layout and arrangement of the steel framing.

I. Submit mill reports to the Architect, if requested and/or as required by the project funding.
   1. Due to the fact that the Project is publicly funded in the Commonwealth of Pennsylvania, all steel shall be manufactured in the United States in accordance with the Pennsylvania "Steel Products Procurement Act" [Act 3 (1978); Act 161 (1982); & Act 144 (1984) of the General Assembly of the Commonwealth of Pennsylvania].

1.06 COORDINATION

A. Examine all drawings as to the requirements for accommodations and/or the installation of work of other trades and provide openings and connections as required for such work and for site assembly of metal work. Show sizes and locations of all such openings on shop drawings.

1.07 STORAGE AND PROTECTION

A. Protect and store cold-formed metal framing from corrosion, deformation and other damage during delivery, storage and handing per requirements of AISI's "Code of Standard Practice".

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design for herein specified Z Purlins is Flexospan Steel Buildings, Inc.'s Flexospan Structural Steel Members. Z Purlin type and size as shown on drawings: 8" deep x 2.5" wide 16 gauge (8x25Z16), galvanized with G-90, weighing 3.099 lb./ft.
   1. Manufacturers of equivalent cold-formed structural sections may be approved by the Project Engineer dependent upon review of complete submittals and loading data during bidding and/or shop drawing review.

2.02 ACCESSORIES

A. Non-Corrosive Fasteners shall be as recommended by fabricator, submit IBC compliance testing according to Paragraph 1.03.A.4.

B. Paint: Galvanized surfaces disturbed by welding or abrasion shall receive a coating of ZINGA, Zinc Film Galvanizing System as manufactured by ZINGA-USA, Cheektowaga, NY..

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection
   1. It is the contractor's responsibility to field verify the extent of work and dimensions of cold formed structural sections prior to ordering, cutting or fabricating.
   2. Prior to installation inspect work of all other trades. Verify that all such work is complete and accurate to the point where this installation may properly commence in strict accordance with

framing shop drawings.

B. Discrepancies
   1. Do not proceed with installation in areas of discrepancies until such discrepancy has been fully resolved.

3.02 ERECTION

A. General:
   1. Fabricate and install cold formed structural sections, and related items, in conformance with the submittals specified hereinbefore, including shop drawings, structural computations, and the printed material and workmanship standards of the manufacturer of the steel framing materials, in addition to the applicable provision of the above referenced standards. Tolerances shall conform to AISC tolerance standards for steel work except as otherwise shown on the approved shop drawings. Tolerances:
      a. Do not exceed 1/8” in 8'-0" variation from plumb or level in exposed lines of surfaces.
      b. Do not exceed 1/16” variation between planes of abutting edges or ends.
      c. Shim as required to comply with specified tolerances.
      d. Spacing of framing members shall not exceed specified spacing requirements by more that 1/8”.
   2. Erect framing plumb, level and square in strict accordance with the approved shop drawings.
   3. Damage done to other surrounding work shall be repaired and made good to satisfaction of Architect as work of this section.

B. Attachment of exterior sheathing: See Section 061000.

3.03 PAINTING

A. Galvanized surfaces disturbed by welding or abrasion, and all welds, shall receive a coating of ZINGA, Zinc Film Galvanizing System as manufactured by ZINGA-USA, Cheektowaga, NY..

END OF SECTION 054100

SECTION 055000 - METAL FABRICATIONS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the metal fabrication work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Miscellaneous steel fabrications
2. Steel form deck
3. Sign posts and bollard bases

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 STANDARDS

A. Work shall meet requirements and recommendations of applicable portions of Standards listed.
1. American Hot Dip Galvanizers Association, AHDGA.
2. American Institute of Steel Construction, AISC.
3. American Iron and Steel Institute, AISI.
4. American National Standards Institute, ANSI.
5. American Society for Testing and Materials, ASTM.
6. American Welding Society, AWS.
7. Steel Structures Painting Council, SSPC.

B. Structural steel shall be in accordance with the American Institute of Steel Construction (AISC) “Specification for Structural Steel Buildings, AISC 360 and “Code of Standard Practice for Steel Buildings and Bridges (AISC 303)”, collectively referred to as "AISC Specifications."

C. Welding shall be in accordance with the Standard Code for Arc and Gas Welding in Building Construction of the American Welding Society, comply with applicable provisions of AWS D1.1 “Structural Welding Code-Steel”.

1.04 SUBMITTALS

A. Product Data:
1. Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.
2. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions, as well as applicable portions of "Structural Shop Drafting" by AISC.
3. Show locations, markings, quantities, materials, sizes and shapes.
4. Indicate methods of connecting, anchoring, fastening, bracing, and attaching work of other trades.

a. Submit all anchorage details on shop drawings for review by Architect.
b. The type, size and extent of all welds, and the welding sequence when required. The welding symbols used on the shop drawings shall be as adopted by the American Welding Society.

5. Draw profiles, sections, and views of items especially manufactured for this work, at a scale large enough to permit checking for design conformity.
6. Note, and mark sufficiently, to indicate compliance with requirements of these specifications.
7. Before authorizing metal fabrication, take field measurements.

B. Where Field Welding is Required: Present evidence that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification.

C. Submit mill reports to the Architect if requested and/or as required by the project funding.
1. Due to the fact that the Project is publicly funded in the Commonwealth of Pennsylvania, all steel shall be manufactured in the United States in accordance with the Pennsylvania "Steel Products Procurement Act" [Act 3 (1978); Act 161 (1982); & Act 144 (1984) of the General Assembly of the Commonwealth of Pennsylvania].

1.05 STORAGE AND PROTECTION

A. Materials shall be covered with waterproof material, carefully piled off the ground in such a manner as to ensure proper drainage, ventilation and protection from damage and weather.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials shall meet requirements of applicable portions of standards listed.
1. Structural Steel Channels, Angles, and Plates: ASTM A36, Grade 36.
2. Structural Steel W Shapes: ASTM A992, Grade 50
3. Steel Tubes (HSS -Hollow Structural Sections): ASTM A500B, Grade 46
4. Carbon Steel Bolts/Studs: ASTM A307, Grade 60.
   a. Steel Nuts: A563, Grade C.
   b. Steel Washers: F436.
5. Filler Metal (Welding Electrodes):
   a. Steel Connections: E60 or E70 Series.
6. Steel Pipe: ASTM A53.
7. Steel Bars (Flat, Hexagon, Round, and/or Square Shapes): Cold Finished ASTM A29, Carbon Steel C1018.

2.02 FABRICATION

A. Form materials to shapes indicated with straight lines, sharp angles, etc.

B. Weld permanent shop connections. Grind smooth, welds that will be exposed. Conceal fastenings where practicable.

C. Fabricate work in shop in as large assemblies as is practicable.

D. Meet requirements specified under Structural Steel for fabricating items of a structural nature or use.

E. All items of metal fabrications which are to be built into or otherwise installed in the building shall be furnished complete and installed by the Contractor or provided for other trades concerned, as required during the progress of the work. Where items of equipment are required to fit spaces in constructed areas or surfaces, the detailed dimensions shall govern and shall be accurately adhered to. Standard commercial products which meet the general requirements of the drawings and specifications and vary only in non-essential detail will be acceptable, subject to the specific approval of the Architect.

1. Before authorizing metal fabrication, the contractor shall take field measurements of the structure and substrates indicated and specified.

F. Workmanship of all items shall be in accordance with standard trade practices. All welding shall be continuous except where tack welding is shown by approved shop drawings. Exposed surfaces shall be ground smooth. Metals shall be clean, free from mill scale and pitting.

2.03 FACTORY / SHOP FINISH

A. All steel members/shapes noted on drawings to be galvanized shall be hot dipped galvanized after fabrication according to ASTM A123; all steel hardware (threaded fasteners, bolts, nuts, washers, anchor bolts, etc.) for foundation and/or connections of galvanized members shall be hot dipped galvanized according to ASTM A153.

1. Galvanized surfaces disturbed by welding or abrasion, and all welds, shall receive a coating of ZINGA, Zinc Film Galvanizing System as manufactured by ZINGA-USA, Cheektowaga, NY.
2. All exterior steel items shall be galvanized.

B. All steel items not specified to be galvanized shall receive a shop prime paint coat as follows:

1. After inspection, clean steelwork to be painted. Remove rust, oil, moisture, dirt, loose mill scale, and spatter, slag, or flux deposits before applying paint. Clean steel in accordance with Steel Structures Painting Council (SSPC) as follows:
   a. Non-exposed steel: SSPC SP1 solvent clean followed by SSPC SP3 power tool clean methods.
   b. All exposed to view mill marks, manufacturing identification names and symbols, fabrication blemishes, etc. shall be removed by grinding smooth prior to painting.
2. Painting: Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions. Use painting methods that result in full coverage of joints, corners, edges, and exposed surfaces. Shop coat of paint shall be products as follows. Shop coating on exposed steel shall be applied evenly so as to furnish smooth surface free of drippings to receive succeeding coats under finish painting. Non-exposed structural steel and/or architecturally exposed steel (Note: all exposed steel members are considered "architecturally exposed"):
   a. One (1) shop coat Tnemec Series 1 Omnithane at 2.5 mils DFT as manufactured by Tnemec Company, Inc.

   OR

   b. One (1) shop coat Corothane I Zinc Primer 1K Mio-Zinc as manufactured by Sherwin Williams.
   c. Apply shop coat(s) of paint after fabrication to all non-galvanized items, except steel that will be encased in concrete or surfaces that will be adjacent to field welds. Use asphalt paint on metals encased in concrete.
   d. Field retouching of scraped, abraded and unpainted surfaces is specified in Section 099000.

2.04 MISCELLANEOUS METAL ITEMS

A. Structural Steel Shapes for Lintels: Shall be shapes/size as indicated on drawings; all members located in exterior walls shall be galvanized. All lintels shall bear on masonry minimum 1'-0", unless otherwise shown. An attempt has been made to locate all necessary lintels on the drawings, however, it shall be the responsibility of the General Contractor to furnish and install all lintels required for all openings in the general construction of this project. Lintels shall be one continuous length to span openings as detailed.

1. Lintels consisting of multiple members shall be shop welded to fabricate assembly.

B. Steel Forming Deck

1. General:
   a. All non-composite floor deck shall be in conformance with the "Non-Composite Steel Form Deck Specifications" of SDI, capable of supporting minimum 100psf live load.
   b. Sheet steel for galvanized forming and accessories shall conform to ASTM A653. Structural Quality Grade 33 or higher. Galvanizing shall conform to ASTM A924 with minimum coating Class of G-60.
2. Acceptable products/manufacturers:
   a. Non-Composite 1.3C (1 5/16"), 24 gage, as manufactured by Vulcraft.
   b. "EHD-Dek" (1 5/16"), 24 gage, as manufactured by New Millennium Building Systems.
   c. UF*X Series (1 5/16"), 24 gage, as manufactured by United Steel Deck, Inc.
   d. At the Contractor's option the following 20 gage galvanized steel forming/decking, may be substituted for above forming:
      1) Non-Composite 1.5C (1 1/2") as manufactured by Vulcraft.
      2) "SD-Dek Inverted" (1 1/2") as manufactured by New Millennium Building Systems.
      3) Inverted B-Lok (1 1/2") as manufactured by CSC Canam Steel Corporation (formerly United Steel Deck, Inc.).

C. Site Signposts and Bollard Bases: Shall be extra strong steel pipe, galvanized. Diameters as indicated. Inside of bollard pipe shall be filled with concrete. Top of signpost shall have welded galvanized steel plate cap.

PART 3 EXECUTION

3.01 INSTALLATION

A. Set metal work level, true to a line, plumb, or as indicated.

B. Weld field connections and grind smooth, where practicable. Conceal fastenings where practicable.

C. Submit all anchorage details on shop drawings for review by Architect.

D. Metal work, in place, shall be approved before being covered.

E. Signpost bollards shall be set in concrete footings as detailed. Excavate hole depths with bottom of hole in firm, undisturbed soil. Excavate deeper as required for adequate support in soft and loose soils, to ensure adequate foundation and support. Place concrete around bollards in a continuous pour, tamp for consolidation. Check each bollard and post for vertical and top alignment and hold in position during placement and finishing operations. Trowel finish tops of footings, and slope or dome to direct water away

from bollards.

END OF SECTION 055000

SECTION 061000 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the rough carpentry work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Dimension Lumber
2. Blocking, grounds, bracing, furring strips, rough hardware and framing where required and/or as shown on working drawings.
3. Plywood Sheathing

C. The General Contractor shall coordinate with other contractors for the furnishing and installation of blocking in new walls or partitions required for the support of equipment. Other contractors shall furnish the General Contractor with detailed drawings showing the size and location of all required blocking. If this information is not transmitted before the walls, partitions, etc., are built, then the General Contractor will not be liable for the cost of the installation of the support blocking and the installation of the support blocking will then be built by the General Contractor but at the expense of the other contractors.
1. The General Contractor shall also coordinate with the Owner for the furnishing and installation of blocking in new walls or partitions required for the support of equipment furnished by the Owner.

D. Work includes, but is not necessarily limited to the following:
1. After the existing roofing system and related materials have been removed down to the existing wood roof deck at Building ‘B’, the existing deck shall be inspected and any areas appearing defective reported to the Architect as specified in Section 024200.
2. Should the Architect determine any damaged existing wood deck requires removal, same shall be replaced with plywood sheathing as specified herein.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Plastic Fabrications – Section 066000.

C. Insulation - Sections 072100 and 072200.

D. Shingles - Section 073100.

E. Sheet Metal Flashing and Trim - Section 076200.

F. All Sections requiring miscellaneous wood blocking for equipment mounting.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements for preservative treated and [fire-retardant treated] lumber and plywood.

C. Shop Drawings: Shall meet requirements of applicable portions of General Conditions, as modified for shop drawings. Shop drawings shall provide specific information concerning materials and installation to meet requirements as specified.

1. Include details of attachment of rough carpentry members to all construction.

1.04 LUMBER MATERIALS STANDARDS

A. Lumber materials shall consist of the following types as presented in schedule. Grade of lumber of various species shall be in accordance with the current published standards of the following associations or agencies, as applicable unless otherwise specified herein:

1. National Lumber Grades Authority - NLGA
2. Southern Pine Inspection Bureau - SPIB
3. West Coast Lumber Inspection Bureau - WCLIB
4. Western Wood Products Association - WWPA

B. All materials shall bear official grade mark of appropriate inspection bureau or association.

1.05 PLYWOOD MATERIALS STANDARDS

A. Fir plywood shall be in accordance with applicable standards of American Plywood Association (aka APA – The Engineered Wood Association).

B. All materials shall bear official grade mark of appropriate inspection bureau or association.

1.06 STORAGE AND PROTECTION

A. All materials delivered to the site shall be covered with waterproof material, carefully piled off the ground in such manner as to insure proper drainage, ventilation and protection from damage and the weather.

1.07 CODES AND STANDARDS

A. All wood construction shall be in compliance with the 2021 IBC (including, but not limited to, Section 110 Inspections, Chapter 17 Special Inspections - Sections 1704 and 1705, specifically 1705.5 Wood Construction, and Chapter 23 Wood, as applicable to this specific project).

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

A. Dimension Lumber:
1. Miscellaneous Framing: Douglas Fir (WWPA), Southern Pine (SPIB) or Hem Fir, Std. or Better Grade; or equal as approved by Architect prior to bid.
   a. Refer to Paragraph 2.04 for lumber to receive preservative treatment.
2. Dimension lumber shall be clearly grade marked.

B. Board and dimension lumber not over 2" in nominal thickness shall be kiln dried or air dried, and moisture content shall not exceed 19 percent at time of fabrication and installation and be stamped "S-DRY", "K-D", or "MC15". Moisture content of lumber over 2" in nominal thickness shall conform to the rules of the association under which it is graded and may be incorporated in the structure without further seasoning.

2.02 GROUNDS AND NAILING PIECES

A. Grounds and nailing pieces shall be well seasoned, dressed both sides, of species specified above. Grounds and nailing pieces shall be placed wherever they are required for installing woodwork of every description.

2.03 PLYWOOD MATERIALS

A. Plywood shall be of the following types and shall be in accordance with applicable standards of the American Plywood Association (APA – The Engineered Wood Association). Provide in thickness(es) shown on drawings.

	Location	Plywood
1.	Roof, Exterior Wall, And/or Misc. Sheathing	APA Rated Sheathing, Veneer Grade (Face/Back): C-D, Bond Classification: Exposure 1 (Exterior Glue), Commonly referred to as CDX

2. Note: Sheathing stamped "TECO Tested" will be acceptable upon verification of meeting plywood veneer grades/exposures specified herein.
3. All plywood applied to the exterior: All cut edges/ends and panel edges/ends shall be field sealed with water repellent sealer.
   a. Water Repellent Sealer: Thompson's Water Sealer or equal. All cut edges/ends of panels, shall be field sealed with water repellent sealer.

B. Plywood shall not exceed 18% moisture content when fabricated nor more than 19% when installed.

C. Fasteners include, but may not be limited to:
1. Screws, corrosion resistant, self-drilling, self-tapping flat head Type S. (i.e., "TEK")

D. Ventilated Nailbase Roof Sheathing/Insulation Bonded Assembly: as specified in Section 072200.

2.04 PRESERVATIVE TREATED LUMBER

A. Give items of framing, including but not limited to, plates on concrete slabs, wood nailers for wood roof

deck, blocking in exterior walls, blocking at roofs, and window blocking, waterborne pressure preservative treatment as accepted by American Wood Preserver's Association (AWPA) and Environmental Protection Agency (EPA); CCA (chromated copper arsenate) is not permitted as a preservative treatment; alkaline copper quaternary (ACQ) and copper azole (CA) are acceptable preservative treatments.

:

1. Lumber shall be treated with waterborne preservative treatment in accordance with AWPA Standard U1 to the requirements of Use Category (UC) with corresponding PCF (*pounds active ingredient per cubic foot of wood)* as follows:

   UC3B Exterior Above Ground
   ACQ Type A or D: 0.15PCF
   ACQ Type B or C: 0.25PCF
   CA Type B: 0.10PCF
   CA Type C: 0.060PCF

B. Treated wood used in enclosed locations shall be reduced to not over l9% moisture content. Treated wood shall bear the Quality Mark of an inspection agency listed by an accreditation body that complies with requirements of American Lumber Standards Treated Wood Program. Quality Mark shall include: identification of treating manufacturer and accredited inspection agency, type of preservative, minimum preservative retention (pcf), end use designation and AWPA standard for which product is treated.

C. Brush coat cut surfaces of lumber sawed or cut after treatment with same preservative used at plant. Fasteners for preservative treated wood: Hot dipped galvanized or stainless steel fasteners. Do not use aluminum fasteners.

D. All treated lumber shall be separated from metal deck, aluminum fascia, etc., with a separation barrier as approved by the Architect. Acceptable products may include:

1. Roofer’s Select Synthetic Underlayment as manufactured by CertainTeed;
2. Shingle-Mate Underlayment as manufactured by GAF;
3. #15 Asphalt Saturated Underlayment as manufactured by ATLAS.

2.05 ROUGH HARDWARE

A. Provide and set all rough building hardware such as spikes, bolts, nails, lag screws, lagging bolts, and anchors as called for or required to hold woodwork together or to anchor it to other material.

1. All fasteners (nails, screws, etc.) for exterior wall and roof work shall be corrosion resistant.
2. All fasteners (nails, screws, etc.) used with preservative treated lumber, regardless of location (exterior wall, roof, etc.) shall be corrosion resistant, either double-galvanized or stainless steel.
3. All fasteners for wood construction shall be in compliance with IBC Code for type/schedule/location, refer to Table 2304.10.1 Fastening Schedule in IBC Code 2021.
4. All fasteners shall be submitted on shop drawings.

B. Sheathing clips for plywood roof deck shall be as manufactured by Simpson Strong-Tie Company, Columbus, OH.

PART 3 EXECUTION

3.01 INSTALLATION

A. Framing lumber and other rough work shall be closely fitted, accurately set to required lines and levels, and rigidly secured in place. Material shall be sized to give true surfaces for finish. Special framing or

construction, not explicitly shown or specified, shall be provided as required to complete work in the best and most workmanlike manner. Nailing and spiking shall be done in a thorough manner, using nails and spikes of ample size and in the proper quantity as per the recommended nailing schedule of the National Lumber Manufacturer's Association.

B. Temporary centering, bracing and shoring for the support and protection of the structure during construction shall be strongly made, properly installed and well secured in place to serve the intended purpose.

C. Wood in Contact with Concrete or Masonry:
1. Use pressure treated wood as specified.
2. Set true and level to provide full bearing.

D. Preservative Treated Lumber in Contact with Metal (steel, aluminum, etc.): Install approved separation barrier sheet between metal surfaces and preservative treated lumber. Separation barrier shall be laid with a minimum of 2" horizontal lap

E. Plywood Roof Sheathing:
1. Placing
   a. Lay face grain at right angles to supports.
   b. Provide 1/8” space between sheets at end and side joints.
   c. Stagger panel end joints.
2. Fastening (Unless noted otherwise on Drawings)
   a. Place fasteners at least 3/8” in from edge.
   b. Place fasteners 6” on center along supported edges.
   c. Place fasteners 12” on centers on intermediate supports.
   d. Place fasteners 4” on center at fascias.
   e. Fasteners shall be flush with, but not penetrate, plywood surface.
3. Immediately cover sheathing with underlayment(s) as specified in Section 073100.

F. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, toilet accessories, furnishings and similar work to comply with details indicated, or if not otherwise indicated, shall be provided as required to complete work in the best and most workmanlike manner.

END OF SECTION 061000

SECTION 066000 - PLASTIC FABRICATIONS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the plastic fabrication work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
   1. Exterior frieze board (simulated wood trim)

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect plastic fabrications during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver plastic fabrications, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate materials have been completed in installation areas. If, due to unforeseen circumstances, plastic fabrications must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.04 STANDARDS

A. All millwork items shall meet requirements and recommendations of applicable portions of Standards listed.
   1. North American Architectural Woodwork Standards – Premium Grade, Latest Edition.

1.05 JOB CONDITIONS

A. Conditioning: Do not install plastic fabrications until required temperature and relative humidity conditions have been stabilized and will be maintained in installation areas.

1.06 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions, as modified for shop drawings. Shop drawings shall provide specific information concerning materials and installation to meet requirements as specified.
   1. Show sizes, quantities, markings, materials, finishes and installed hardware.
   2. Draw profiles, sections, and views of items especially manufactured for this work, at a scale large enough to permit checking for design conformity.

3. Make assembly and installation drawings to show methods of fastening, bracing, and connecting to work of other trades.
4. Mark sufficiently, to indicate compliance with requirements of these specifications.
5. Field verify all dimensions.

1.07 SAMPLES

A. Submit color, texture and pattern samples for plastic fabrications.

1.08 WARRANTY

A. Exterior Plastic Trim Boards shall be warranted by the manufacturer against defects in manufacturing that cause products to rot, corrode, delaminate, or excessively swell from moisture

PART 2 PRODUCTS

2.01 EXTERIOR PLASTIC TRIM BOARDS

A. Exterior Plastic Trim Boards (simulated wood trim): All material shall be high-density PVC that resists rotting, decaying, warping, splintering, mildew growth and insect infestation, in shapes/sizes as detailed. All trim shall be field painted, as specified in Section 099000, should the natural white finish of the product not be the finish color as selected by Owner/Architect.

1. Acceptable products include the following:
   a. PVC Trim by Fypon, LLC, Maumee, OH, with Limited Lifetime Warranty.
   b. Azek Trimboards by Vycom Corporation, Moosic, PA, with Limited Lifetime Warranty
   c. Versatex Trimboard, a Product of Wolfpac Technologies, Inc., Aliquippa, PA, with twenty-five (25) year warranty.
2. Fasteners (non-corrosive), adhesives, sealants, and installation shall be according to manufacturer's recommendations.

PART 3 EXECUTION

3.01 INSTALLATION

A. Furnish and install all plastic fabrications necessary to complete the project as specified and as required by drawing details.

1. Fasten per manufacturer's recommendations, which may include, but not limited to:
   a. Allow 1/8" per 18'-0" of trim for expansion and contraction. Glue joints between pieces to eliminate joint separation.
   b. Use 2 fasteners to every framing member. Trim boards 12" or wider and sheets require additional fasteners, not to exceed 8" on center. Fasteners must be installed within 2" of the end of each board, and 2 fasteners must be on each side of a board joint (scarf, miter, etc.).

B. All items shall be securely installed in the best manner with a minimum number of joints. Completed work shall be free from all hammer marks, sand scratches, tool scratches, etc. All miter and other joints shall be made true and perfect.

C. Before setting plastic fabrications, see that all blocking is in place and rigidly secured to masonry or other structural work by expansion bolts built-in anchors and/or other approved methods.

D. All primed or painted portions of surfaces which have been marred in any way shall be refinished to match surrounding areas before plastic fabrications are put in place. Such reconditioning shall be to the

complete approval of the Architect and the Owner.

END OF SECTION 066000

SECTION 072100 - THERMAL INSULATION

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the building thermal insulation work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Cast-In-Place Concrete - Section 033000.

C. Structural Metal Stud Framing - Section 054100.

D. Rough Carpentry - Section 061000.

E. Roof & Deck Insulation - Section 072200.

F. Wall Board Assemblies - Section 092116.

G. Earth Moving - Section 312000.

1.03 STANDARDS

A. Materials and workmanship shall meet requirements and recommendations of applicable portions of standards listed.
1. American Society for Testing and Materials, ASTM.
2. Insulation Board Institute, IBI.
3. Underwriters' Laboratories, UL.
4. Thermal Insulation Manufacturers Association, TIMA.

B. All foam plastic insulation shall also comply with the following:
1. Flamespread and smoke development shall be 25 and 450 or less respectively per ASTM E-84.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions for each type of insulation.

B. Certified Tests: With product data, submit copies of certified test report showing compliance with specified performance values, including k-values (aged values for plastic insulations), densities, compression strengths, burning characteristics, perm ratings, water absorption ratings and similar ratings.

1.05 WARRANTY

A. From the date of final payment of the project, manufacturer(s) shall issue to the Owner warranties as follows:

1. Fifteen Year Thermal Resistance Warranties covering rigid insulations, cavity, wall, foundation perimeter and under floor slab.

1.06 STORAGE AND PROTECTION

A. Materials shall be stored in position as recommended by the manufacturer and shall be protected from moisture absorption. Insulation that becomes damaged or wet shall not be used. Material shall be protected from moisture while being stored, installed, and after installation (prior to installation of finishing materials).

PART 2 PRODUCTS

2.01 MATERIALS

A. Rigid Insulation: For perimeter foundation walls, under floor slab locations and elsewhere as detailed (except within cavity wall construction), shall be extruded polystyrene, Foamular 250 as manufactured by Owens-Corning Fiberglas Corp. "R" = 5.41 per inch thickness at factor of 40°F; Aged "R-Value" = 5.0 per inch thickness at mean temp of 75°F. Minimum compressive strength of 25 lb/in^2. Material shall comply with ASTM C578 Type IV. Provide thicknesses shown on drawings.

1. Additional products approved for bidding, complying with herein specifications:
   a. Styrofoam Square Edge by Dupont;
   b. GG25-LG XPS Insulation Board by Kingspan Insulation;
2. 100 Non-fibered Emulsion by Karnak is an acceptable adhesive emulsion for application of polystyrene insulation to masonry and/or concrete walls (emulsion is not acceptable as dampproofing product in lieu of parging as specified in Section 040513).

B. Rigid Insulation (for exterior masonry cavity walls*)*: Shall be Thermax Sheathing, a Dow Building Solutions Material, as manufactured by the Dow Chemical Company, Midland, MI, complying with ASTM C1289, Type 1, Class 1, Grade 3 (25 psi). Sheathing shall be rigid polyisocyanurate foam core board laminated between 1.0 mil smooth, reflective aluminum facers on both sides. Compressive strength per ASTM D1621 shall be 25psi.

1. All joints of sheathing boards and/or penetrations through boards shall be sealed with Dow LiquidArmor, Dow Weathermate Flashing or Dow Great Stuff Pro Window & Door Sealant.
2. Provide thickness(es) as shown on drawings; R-values for various thickness(es) shall be as follows:
   a. 1” nominal board thickness: R-6.9.
3. Additional products approved for bidding, complying with herein specifications, including sealing:
   a. Xci Foil Panels as manufactured by Hunter Panels, Portland, ME.
   b. R2+ Silver as manufactured by Carlisle Coatings & Waterproofing.
   c. Enverge CI Foil Exterior Wall Insulation as manufactured by Firestone
   d. Energy Shield Pro cavity insulation by Atlas Roofing Corporation.
   e. Johns Manville AP Foil25 Polyisocyanurate Continuous Insulation

C. Standard 15"/16" wide Thermal Batt or Roll Fiberglass Insulation and/or Sound Attenuation Batts: Shall be inorganic glass fibers as manufactured by Owens-Corning EcoTouch Pink/Pink Next Gen Fiberglas

Insulation; Knauf Insulation EcoBatt Insulation; CertainTeed Fiber Glass Insulation; Johns Manville; or approved equal. Insulation shall meet ASTM C665 for following types: Unfaced - Type I, flamespread: <25, smoke developed: <50. Provide unfaced type for all interior partitions, including sound attenuation batt locations, as well as exterior locations to receive plastic vapor barrier sheeting. Thicknesses shall be as required to fill depth of stud space without compressing the batt, and/or as indicated on drawings.

1. R-values for exterior and/or roof truss locations include, but may not be limited to the following:
   a. R-15 (HD), labeled thickness 3-1/2"
   b. R-21 (HD), labeled thickness 5-1/2"
   c. R-38, labeled thickness 12"
2. Sound Attenuation Glass Fiber Batts (also acceptable for interior stud walls in compliance with details): Owens-Corning: Ecotouch Sound Attenuation Batt/QuietZone® Acoustic Batts/Pink Next Gen Sound Attenuation Batts (SAB), Johns Manville Sound-SHIELD, and/or Certainteed CertaPro™ AcoustaTherm.

D. Foam Insulation for voids between window/door frames and building structure and voids behind window/door trim, covers, etc.: Shall be closed cell polyurethane spray insulation foams, containing no CFC's, Penta-BDE's, VOC's, and/or Urea Formaldyhyde, and meeting E-84 Fire Rated Class I. Acceptable products include, but may not be limited to, Foam It Green by Guardian Energy Technologies, Chicago, IL; Dow Great Stuff Window & Door Foam Sealants; and Gold Seal 400 by Icynene, Mississauga ON; or equivalent.

PART 3 EXECUTION

3.01 INSTALLATION – GENERAL

A. Install products according to manufacturer's recommendations.

3.02 INSTALLATION OF PERIMETER FOUNDATION WALL INSULATION

A. Perimeter wall rigid insulation shall be installed in all locations as shown on drawings. All fins and projections shall be removed from wall surfaces. Insulation boards shall be installed to depth as shown on drawings. Boards shall be tightly butted. Apply with adhesive and by procedures as recommended by insulation manufacturer.

3.03 INSTALLATION OF UNDER SLAB INSULATION

A. Insulation shall be installed in all locations as shown on drawings. Cut and fit tightly around obstructions, and fill all voids. All insulation shall be laid with long joints continuous, end joints staggered 1/2 the length of the board and all boards in snug contact.

3.04 INSTALLATION OF CAVITY WALL INSULATION

A. Install rigid insulation horizontally within cavity space against back-up wall. Boards shall be tightly butted and installed between masonry ties. Apply to parged surfaces and secure with hook portion of adjustable ties. All joints of sheathing boards and/or penetrations through boards shall be sealed with specified flashing or sealant.

3.05 BATT OR ROLL INSULATION INSTALLATION

A. Insulation shall be installed in all locations as shown on drawings and/or as required to complete the project. Butt ends of blankets closely together and fill all voids.

1. Walls: Install to full cavity space, from floor to full length of stud.
2. Ceiling/Trusses: Install ceiling insulation between bottom chord of trusses.

END OF SECTION 072100

SECTION 072200 - ROOF & DECK INSULATION

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the roof and deck insulation work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Nailbase Insulation for Shingle Roofing shall be secured through roof insulation to wood deck as follows:

1. Secure with mechanical fasteners. It shall be the responsibility of the Contractor to perform all testing of roof decks to determine pull-out values, if required by the nailbase manufacturer, to ascertain correct fasteners required for installation of material to the deck to comply with selected roofing warranty requirements.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

C. Shingles - Section 073100.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions for each type of insulation.

B. Certified Tests: With product data, submit copies of certified test report showing compliance with specified performance values, including k-values (aged values for plastic insulations), densities, compression strengths, burning characteristics, perm ratings, water absorption ratings and similar ratings.

C. Shop Drawings: Shop drawings shall include:

1. Insulation type, brand and thickness and "R" value.
2. Roof insulation fastener type, size and spacing for various deck types and in compliance with IBC Code 2021 and ASCE 7, including, but not limited to, fastener patterns to withstand uplift forces at roof interior field area (Zone 1), edge conditions (Zone 2), and corner conditions (Zone 3), for the various roof heights of the building.
    a. Submit all calculations used to determine fastener patterns.

1.04 STANDARDS

A. Materials and workmanship shall meet requirements and recommendations of applicable portions of standards listed.

1. American Society for Testing and Materials, ASTM.
2. Polyisocyanurate Insulation Manufacturers Association, PIMA.

3. Underwriters' Laboratories, UL.
4. North American Insulation Manufacturers Association, NAIMA.
5. National Roofing Contractors Association, NRCA.
6. Nailbase sheathing shall be in accordance with applicable standards of The American Plywood Association, APA.

B. Insulation shall be installed to comply with the 2021 IBC Code and ASCE 7. Roofing subcontractor and all installers shall have been trained on IBC 2021 and ASCE 7 requirements for fastener locations in compliance with codes and roofing system warranty.

1.05 STORAGE

A. Materials shall be stored in position as recommended by the manufacturer and shall be protected from moisture absorption. Insulation that becomes damaged or wet shall not be used.

PART 2 PRODUCTS

2.01 MATERIALS

A. Roof Insulation: Shall be Polyisocyanurate, consisting of a closed cell polyisocyanurate foam core laminated to a high-performance facer of felt or mat with a 20 psi minimum compressive strength complying with ASTM C1289, Type II (felt or mat face), Class 1 (roofing product), Grade 2; and FM Approval, Wind Uplift Classification: 1-90. Long Term Thermal Resistance (LTTR) and R values shall comply with either CAN/ULC-S770-09 or ASTM C1303-11 with minimum values as shown below; provide thicknesses as shown on drawings.

1. LTTR Values:

Thickness (inches)	LTTR values per inch thickness	LTTR values per thickness
1	5.6	5.6
2	5.7	11.4
3	5.8	17.4
4	5.9	23.6

2. Roof insulation shall be as approved by and as required by roofing membrane manufacturer in compliance with specified warranties. Products/manufacturers include:
   a. Elevate/Firestone ISO 95+ GL as manufactured by Firestone Building Products Company.
   b. Insul-Base (formerly HP-H), 20 PSI, as manufactured by Carlisle Syn Tec Systems, Carlisle, PA.
   c. VersiCore MP-H, as manufactured by Versico.
   d. Flat & Tapered ENRGY 3, 20 PSI, as manufactured by Johns Manville.

B. Fasteners: Shall be as required to meet requirements of the roof system warranty. Provide appropriate fasteners for the various types of deck materials. The fasteners shall be of sufficient length to comply with the manufacturer's minimum penetration requirements.

C. Ventilated Nailbase Roof Sheathing/Insulation Bonded Assembly for Shingle Roofing Areas: Shall be approximately 5.20” thick overall, with 20.5 R-Value, consisting of 3/4" thick CDX - APA (w/exterior glue) plywood sheathing (as specified in Section 061000) with 1” deep wood block spacers secured to the underside of each 4’ x 8’ panel and factory bonded to 3-1/2” thick polyisocyanurate insulation, complying with Paragraph 2.01.A above. The wood spacers between the insulation and sheathing shall be not more than 12" apart in any direction, allowing unobstructed air space over 92% of the panel area for free air

movement and cross ventilation (75% lateral air movement). Nailbase sheathing shall be rabbeted 1/8" nominal on all sides.

1. Products approved for bidding: Cool-Vent as manufactured by Hunter Panels, Headquarters: Portland, ME; and Vent-Top ThermaCal 1 as manufactured by Cornell Corporation, Cornell, WI.
2. Fasteners for use into wood decks shall penetrate minimum 1” beyond underside of wood deck as recommended by nailbase manufacturer.

PART 3 EXECUTION

3.01 APPLICATION OF ROOF INSULATION

A. Roof deck shall be clean and dry. Roof decks shall be swept clean of any debris prior to installation of insulation. No materials shall be applied until all required roof openings in the deck have been made by the various Contractors involved. Any deviations from this requirement shall be approved by the Architect. All materials shall be thoroughly dry before being applied. No materials are to be installed that cannot be covered with finish roof materials during the same work period or before the onset of inclement weather. Protect all materials from the elements before and during laying of same. If materials become wet or damaged in any way, the Contractor shall remove same from site and replace with new materials.

B. Extend 2” thick base layer of insulation over entire area of roof deck prior to installation of nailbase insulation assembly. Remove projections which interfere with placement. Neatly fit insulation tightly to all obstructions, penetrations, projections and nailers. Fill all gaps greater than 1/4" wide with insulation of the same type. Secure insulation as specified below.

C. Ventilated Nailbase Roof Sheathing/Insulation Bonded Assembly for Shingle Roofing Areas shall be installed over base layer insulation with long joints continuous, end joints staggered 1/2 the length of the board and all boards in snug contact. All joints of nailbase insulation assembly shall be staggered over the base layer insulation. Secure nailbase insulation assembly as specified below.

D. Fastening of Insulation and Ventilated Nailbase Roof Sheathing/Insulation Bonded Assembly:
   1. All materials shall be installed to withstand damage by winds up to and including 85mph Vasd Nominal design wind speed.
   2. Base layer insulation over wood roof deck shall be mechanically fastened to the deck.
   3. Ventilated Nailbase Roof Sheathing/Insulation Bonded Assembly for Shingle Roofing Areas shall be secured through base layer insulation to wood deck as follows:
      a. Secure with mechanical fasteners to the roof deck as required by the assembly manufacturer and the roofing system manufacturer to meet requirements of the roof system warranty(s). Fasteners for use into wood decks shall penetrate minimum 1” beyond underside of wood deck.
      b. After installation, immediately cover sheathing with underlayment specified in Section 073100. Any wet or damaged panels shall be replaced.

END OF SECTION 072200

SECTION 072500 - WEATHER BARRIERS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the weather barrier work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Cast-in-Place Concrete - Section 033000.

C. Earth Moving - Section 312000.

1.03 STANDARDS

A. All products shall meet requirements and recommendations of applicable portions of the American Society for Testing Materials - ASTM.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall be submitted to meet requirements of applicable portions of General Conditions of the Construction Contract. Shop drawings shall include tie-in details for all products to the adjacent materials and systems.

1.05 QUALITY ASSURANCE

A. The installation of all weather barriers and flashings shall be inspected and verified by the Owner’s representative prior to installation of subsequent materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Vapor Barrier/Retarder for under interior concrete floor slabs on grade: Shall be 15 mil polyolefin film meeting or exceeding ASTM E1745 Class A Standards. Seal all joints and at abutting surfaces with pressure sensitive high density polyethylene tape or mastic as recommended by membrane manufacturer for specific material and application indicated. Acceptable products:

1. Moistop Ultra 15 as manufactured by Fortifiber Building Systems Group, with Moistop® Tape
2. VaporFlex 15 as manufactured by Layfield;

3. Stego Wrap 15 mil Vapor Barrier as manufactured by Stego Industries LLC;
4. Viper VaporCheck II 15-mil as manufactured by Insulation Solutions Inc. (ISI);
5. Perminator™ 15 mil by W.R. Meadows;
6. Xtreme 15 mil Vapor Barrier/Retarder as manufactured by Tex-Trude;
7. Husky Yellow Guard 15 mil vapor barrier by Poly-America, Grand Prairie, TX;
8. Barrier-Bac VB-350 (16 mil) Vapor Barrier as manufactured by Inteplast Group;
9. Vapor Block 15 mil as manufactured by Raven Industries.

B. Flashings for Wall Openings: Fully flash all window and door openings, including pan flashing at sills, side flashing that extends over pan flashing and top flashing that extends over side flashing, in accordance with ASTM E2112.07 “Standard Practice for Installation of Exterior Windows, Doors and Skylights” and the IBC Code. Products shall be coordinated with any air and water resistive barrier applied to exterior sheathings and/or parging applied to concrete masonry unit wall construction. Products may include, but not be limited to the following:

1. GCP Applied Technologies (formerly Grace) Vycor Self-Adhered Flashing.
2. Fortifiber Self-Adhesive Flashings (FortiFlash® & Moistop E-Z Seal®).
3. DuPont™ FlexWrap™, DuPont™ FlexWrap™ NF, DuPont™ StraightFlash™, DuPont™ StraightFlash™ VF.
4. BT25XL Window and Door Sealing Tape by Protecto Wrap Co., Denver, CO.
5. or equivalent as approved by the Architect.

C. Vapor Barrier for installation on the interior side of exterior wall studs: Shall be minimum 6 mil woven poly sheeting - reinforced clear plastic. Dura Skrim (i.e., 6 mil reinforced plastic sheeting) is acceptable.

PART 3 EXECUTION

3.01 VAPOR BARRIER - CONCRETE SLABS ON GRADE

A. Tape all joints and at abutting surfaces. Washed gravel shall be leveled and tamped before laying vapor barrier. All joints shall be lapped a minimum of six inches and sealed as recommended by vapor barrier manufacturer. All protrusions through the vapor barrier shall be sealed. The vapor barrier shall be turned up at abutting walls and sealed. Protect against damage of puncturing.

3.02 VAPOR BARRIER – EXTERIOR STUD WALLS

A. Install vapor barrier on interior of exterior insulated walls to comply with ASTM C755 and with written directions of vapor barrier manufacturer. Seal joints by lapping and bonding with adhesive or vapor retarder tape. Extend coverage to extremities of areas to receive retarders. Seal punctures, tears and penetrations through retarders with vapor retarder tape or strips of vapor retarder material adhesively applied.

3.03 FLASHINGS FOR WALL OPENINGS

A. Flashings for Wall Openings: Products shall be installed in accordance with manufacturer’s published instructions.

B. The installation of flashing shall be inspected and verified by the Owner’s representative.

END OF SECTION 072500

SECTION 073100 - SHINGLES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the shingle work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

C. Roof & Deck Insulation - Section 072200.

D. Sheet Metal Flashing and Trim - Section 076200.

E. Sealants - Section 079200.

1.03 STANDARDS

A. Materials and workmanship shall meet requirements and recommendations of applicable portions of Standards listed:

1. Sheet Metal and Air Conditioning Contractors National Association, SMACNA.
2. American Society for Testing and Materials, ASTM.
3. Underwriters' Laboratory, U.L.
4. IBC 2021

1.04 QUALITY ASSURANCE

A. Prior to commencing with the specified work, a Pre-Roofing Conference shall be held at the job site so that all field conditions are evaluated and modifications of the shop drawings are agreed upon, if necessary. In addition to the Project Architect, a representative of each Prime Contractor affected by the roofing work (i.e. equipment penetrating the shingle roof or whose work involves access to the shingle roof), the General Contractor, the shingle installer and a Representative of the shingle manufacturer shall attend the Pre-Roofing Conference along with the building Owner's Representative. The Contractor shall notify Architect and other attending parties at least three days prior to time of conference.

B. Installer Qualifications: The installer shall have a minimum of five (5) years' experience installing the type of roofing herein specified, on projects of similar size and complexity.

1. Roofing Contractor/Installer shall be a certified contractor/installer by the selected shingle manufacturer.
2. All work under this section, as well as Section 072200 and roof associated items of Section 076200, shall be performed by a single firm, in business for a minimum of (5) years in the roofing

business, with a minimum of (5) years experience in the installation of shingle roofing, and all applicators shall be authorized/trained/accepted by the shingle manufacturer.

3. The work shall be performed by skilled workmen who have been trained by the shingle manufacturer, and supervised by an experienced foreman/foremen who has/have received training by the shingle manufacturer.

C. Inspections:

1. A Technical Representative of the shingle manufacturer shall make all inspections of the roofing system, including installation procedures, as deemed necessary by the shingle manufacturer.
2. During installation, In-Progress Inspections shall be performed by a Technical Representative of the shingle manufacturer to ascertain all requirements of the specification are being followed by the roofing subcontractor. The Technical Representative shall make a minimum of one inspection for every 7,500 square feet of roof area, but not less than one inspection per week. Upon receipt, the roofing contractor must provide the Architect with a copy of the shingle manufacturer's In-Progress Inspection Report. Costs associated with this inspection shall be included in the applicator's bid.

D. Defective Work:

1. Should the installation of the roofing system not be approved by the manufacturer's technician, correcting the defective work shall be done by the roofing subcontractor until the roof system satisfactorily meets all the specification and manufacturer's requirements. Corrective work will be done with no additional expense to the Owner.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications and installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall be submitted to meet requirements of applicable portions of General Conditions. Shop drawings shall include:

1. Outline of roof and roof size.
2. Location and type of all penetrations.
3. Details for all conditions of roofing, sheet metal work, perimeter and penetration details, and other roofing work installation.
4. Make assembly and installation shop drawings of manufactured and fabricated items to show methods of fastening and connecting to work of other trades.

C. Color Selectors.

D. Warranty: Submit all required warranties, guarantees, and maintenance instructions pertaining to the roof assembly as specified in Section 017700.

1.06 STORAGE OF MATERIALS

A. All roofing materials shall be stored off ground and protected. Materials shall be stored in manner as recommended by manufacturer, to prevent becoming deformed or damaged.

1.07 WEATHER CONDITIONS

A. Proceed with roofing system installation only when existing and forecasted weather conditions are favorable and will allow work to proceed in accordance with requirements and recommendations of manufacturers of primary roofing system materials.

1.08 WARRANTY

A. The asphalt shingle manufacturer shall issue to the Owner warranty(s), as herein specified, covering manufacturing defects in materials occurring within the time limit of the warranty(s). The shingle manufacturer shall repair or replace defective shingles and associated materials under the terms of these warranties. Warranty periods as herein stated shall begin from date of final payment of the project. All roofing accessory products, as herein specified and/or as required to complete the work, shall be as recommended by the selected shingle manufacturer to meet requirements of the specified systems warranty. Roofing subcontractor shall be a certified installer for the selected shingle manufacturer and register and pay for specified warranty.

1. Manufacturers residential “Lifetime” or commercial “50-year” limited transferable Warranty with the following additional features:
    a. Provide 10-year SureStart™ warranty (100% replacement and labor costs due to manufacturing defects).
    b. Provide 15-year wind warranty up to 130 MPH.
    c. Provide 30-year StreakFighter™ Algae Resistant warranty against streaking and discoloration caused by airborne algae.

B. The Roofing Subcontractor shall furnish a written two-year workmanship warranty covering repairs required to maintain roof, including flashing, in a satisfactory condition free of leaks at no expense to the Owner. The Subcontractor shall replace all defective roofing materials and shall repair all leaks due to defective materials and/or workmanship, including replacing all damaged insulation and all other damaged materials due to leaks in the roof system. During this two-year period the Contractor shall make four site visits, (bi-annual in the spring and fall). At each visit the Contractor shall provide the following:

1. A comprehensive visual inspection and written report, (including photographs), to the Architect of all conditions and corrections.
2. Repairs to flashing.
3. Refasten loose material.
4. Recaulk all joints as required.
5. Clean debris from roof, gutters, and downspouts.

PART 2 PRODUCTS

2.01 MATERIALS

A. Shingles shall be "Landmark PRO" as manufactured by CertainTeed Corporation, Valley Forge, PA, and conform to the following:

1. Appearance: Two-piece, random tab laminated asphalt fiber glass-based construction (architectural/dimensional shingle). Composed of a fiber glass mat base with ceramiccoated mineral granules tightly embedded in water-resistant asphalt. Two pieces of the shingle are laminated together in an asphaltic cement. Shingles have self-sealing adhesive strips (Quadra Bond) and NailTrak.
2. Size: 13 1/4" x 38 3/4"; Weather Exposure: 5 5/8”

3. Shingles/Square: 66±
4. Weight per square 231 - 240 pounds
5. Applicable Standards:
    a. UL 2218 Class 3 Impact Rated
    b. ASTM D3018 Type 1 - Self-Sealing
    c. ASTM D3462 - Tear strength
    d. ASTM D3161 Class F Wind Resistance
    e. ASTM D7158 Class H Wind Resistance
    f. ASTM E108 & UL 790 - Class A Fire Resistance
    g. ICC-ES (ESR and/or AC)
6. Provide CertainTeed starter, hip and ridge shingles as required to comply with specified warranty, as well as CertaSeal modified asphalt sealant.
7. Color shall be as selected by Architect and/or Owner from any of manufacturer's 16 colors.
8. Products as manufactured by the following, offering an equivalent total roofing system warranty, as well as, equivalent aesthetics and color selection are approved for bidding, subject to Architect's review of submittals.
    a. TruDefinition Duration Designer Shingles as manufactured by Owens-Corning.
    b. Timberline HDZ Shingles as manufactured by GAF
    c. Cambridge Architectural Shingles as manufactured by IKO

B. Ice and Water Shield Roofing Underlayment: Shall be self-adhering waterproofing sheet membrane, minimum 40 - 60 mil thick, comprised of strong, skid resistant polyethylene film laminated to thick layer of highly adhesive rubberized asphalt, meeting ASTM D1970 and shingle manufacturer's requirements for warranty(s) as herein listed. Acceptable products may include:

1. WinterGuard Granular Waterproofing Shingle Underlayment as manufactured by CertainTeed Corporation
2. Weatherlock Mat Self-Sealing Waterproofing Barrier as manufactured by Owens-Corning
3. WeatherWatch Mineral-Surfaced Leak Barrier as manufactured by GAF Materials Corporation
4. StormShield Ice & Water Protector as manufactured by IKO

C. Synthetic Roofing Underlayment: Shall be composite rolled fiberglass-reinforced sheet material per ICC – ES, in conformance with ASTM D226, ASTM D4869, ASTM E108/UL 790 Class A Fire Resistance, and shingle manufacturer's requirements for warranty(s) as herein listed. Acceptable products may include:

1. Roofers Select as manufactured by CertainTeed (Roll: 36"W x 144'L, 44lb.)
2. Products as manufactured by Owens-Corning:
    a. ProArmor Synthetic Roofing Underlayment (Roll: 42"W x 286'L, 23.5lb.)
    b. Deck Defense Premiuim Synthetic Underlayment (Roll: 48"W x 250'L, 31lb.)
3. Shingle-Mate Underlayment as manufactured by GAF (Roll: 36"W x 144'L, 30lb.)
4. Stormtite Synthetic Underlayment as manufactured by IKO (Roll: 48"W x 250'L, 20-26lb.)

D. Fasteners: Galvanized fasteners shall be of sufficient length as required for proper securement of the material as recommended by the shingle manufacturer. Fasteners shall be minimum 12 gage, minimum 3/8" head, minimum length to penetrate roof sheathing 3/4" and comply with ICC 2018.

E. Plastic Cement: ASTM D4586 Type I or II.

F. Ridge Vent: Shall be formed of virgin high density linear polyethylene, minimum 11" - 12" wide x 1" high for "shingle over" application and include wind baffle (weather foil), weather filter (snow screen) and end caps/plugs. Minimum 17 sq.in. NFVA per lineal foot ventilation. Color as selected by Architect.

Ridge vent shall meet shingle manufacturer's requirements for warranty(s) as herein listed. Acceptable products may include:

1. Ridge Vent as manufactured by CertainTeed
2. VentSure Rigid Roll with Weather Protector as manufactured by Owens-Corning
3. GAF Cobra Ridge Vent 3 as manufactured by GAF
4. Armourvent Ridge Plus as manufactured by IKO

G. Drip Edge, Gutter, Downspouts, Rooftop Penetration Flashing Boots, etc.: See Section 076200.

H. Liquid Flashing: Shall be as recommended by the selected shingle manufacturer to meet requirements of the specified system warranty. Liquid flashing shall include polyester reinforcement fabric used with polyurethane bitumen waterproofing resin. Acceptable products may include:

1. "SmartFlash" One or Two-Component Systems as manufactured by CertainTeed.

PART 3 EXECUTION

3.01 GENERAL

A. Pre-roofing Conference: Prior to beginning shingle roofing work, a pre-roofing conference shall be held to review the work to be accomplished as specified in Paragraph 1.04.A.

3.02 INSTALLATION

A. The Contractor shall examine the roof deck surface for any defects which will be detrimental to the proper installation of the roofing materials. Any defects shall be corrected before starting application of shingles.

B. Install ice and water shield (self-adhering underlayment) on roof areas as designated on drawings according to manufacturer's instructions. Areas not designated to receive ice and water shield over entire surface of roof deck shall have ice and water shield extended minimum distances as follows, unless otherwise detailed on drawings: (1) up roof eaves to at least 24" beyond the interior wall line (2) up valleys a minimum 18" each side (3) up 18" at rakes. End laps must be 6" and side laps must be 3-1/2". Backnail 8' lengths. Cover nails by overlapping with the next sheet.

1. Manufacturers installation instructions may vary for eave and/or low-slope areas (roof slopes less than 4:12).

C. For roof slopes 4:12 and greater: Install one layer of synthetic underlayment over entire roof deck, including areas with ice and water shield. Synthetic underlayment shall be laid parallel to the eaves, lapping each course at least 2" and a minimum of 4" end lap per layer, unless otherwise required dependent upon slope of roof. Stagger end laps at least 6'-0" from course to course. Secure the synthetic underlayment with nails to hold it in place, driven straight and flush with the surface. Lap the synthetic underlayment a minimum of 6" from both sides over all hips, ridges and valleys. Where the roof meets a vertical surface, carry the synthetic underlayment at least 4" up the surface.

1. On low-slope applications (roof slopes less than 4:12), install two layers of synthetic underlayment over entire roof deck, including areas with ice and water shield. Begin by fastening a 19" wide strip of synthetic underlayment placed along the eaves. Place a full width sheet over the starter with a long edge placed along the eave and completely overlapping the initial starter course. All succeeding courses will be a minimum of 36" wide and should be positioned to overlap the preceding course by 20". Secure each course by only enough fasteners to hold it in

place until the shingles are applied. End laps should be 12" wide and located at least 6' from end laps in the preceding course.

D. Shingles shall be installed in conformance to manufacturer's recommendations and Application Manual, Latest Edition.

E. Install related sheet metal items specified in Section 076200.

F. Install ridge vent as recommended by manufacturer. Install cap shingles on vents.

3.03 CLEANING

A. Protect adjacent surfaces during roofing to prevent damage from work.

B. Clean adjacent surfaces from soil, stain, and adhered materials. Remove and replace damaged work that can not be restored to original conditions.

C. Remove excess materials and debris from site.

END OF SECTION 073100

SECTION 076200 - SHEET METAL FLASHING & TRIM

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the sheet metal flashing and trim work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Thru-wall flashing for masonry work
2. Formed flashing items required to complete and weatherproof the building envelop, including but not limited to miscellaneous roof flashings.
3. Aluminum gutter and downspout system.
4. Aluminum soffit.
5. Splash blocks

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Unit Masonry - Section 042000.

C. Rough Carpentry – Section 061000.

D. Shingles - Section 073100.

E. Joint Sealants - Section 079200.

1.03 STANDARDS

A. Materials shall meet requirements and recommendations of applicable portions of Standards listed:
1. American Society for Testing and Materials, ASTM.
2. Sheet Metal and Air Conditioning Contractors National Association, SMACNA.
3. American Architectural Manufacturer's Association, AAMA

B. Kynar 500 Finish shall comply with Fluoropolymer Paint Coating that meets or exceeds American Architectural Manufacturer's Association Standard AAMA 2605, Coating shall be minimum 1.2 mils thick.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall be submitted to meet requirements of applicable portions of General Conditions.
1. Shop drawings shall include:

a. Details for all conditions of sheet metal installation.
b. Manufacturers literature for various components.

C. Sample and final warranties. Submit warranties according to Section 017700.

D. Samples: Submit samples of shop fabricated items for Architects review.

1.05 STORAGE OF MATERIALS

A. All materials shall be stored off ground and protected. Materials shall be stored in manner as recommended by manufacturer, to prevent becoming deformed or damaged.

1.06 MANUFACTURER'S WARRANTY

A. Prefinished aluminum materials shall be provided with minimum ten (10) year finish warranty, providing for non-prorated material and replacement cost. Finish shall be warranted against chalking, fading or change of color, cracking, checking or peeling for the complete system(s) including miters, special shapes, end pieces and similar items.

1.07 CONTRACTOR'S WARRANTY

A. The Contractor shall furnish a written two-year workmanship warranty covering repairs required to maintain miscellaneous roof flashings and roof gutter and downspouts (in association with Contractor's roof warranty as specified in Section 073100 in a satisfactory condition free of leaks at no expense to the Owner. The Contractor shall replace all defective materials and shall repair all leaks due to defective materials and/or workmanship. During this two-year period the Contractor shall make four site visits, (bi-annual in the spring and fall). At each visit the Contractor shall provide the following:

1. A comprehensive visual inspection and written report, (including photographs), to the Architect of all conditions and corrections.
2. Repairs to materials.
3. Refasten loose metal terminations.
4. Recaulk all open seams.
5. Clean debris from gutters/downspouts.

PART 2 PRODUCTS

2.01 MATERIALS

A. Thru-wall Flashing: Shall be 3 ounce copper bonded between two layers of waterproofed material. Provide prefabricated flashing corners.

1. Acceptable Products: Multi-Flash 500 by York Mfg.; or Copper Sealtite 2000 by Advanced Building Products, Inc. 3 oz. copper sheet bonded with rubber based adhesive (asphalt free) between two layers of fiberglass; or Copper NA Copper Fabric Flashing by H & B, Inc., a composite membrane consisting of a polyethylene film laminated to both sides of a 3 oz. copper sheet.
   a. At the Contractor's option, Multi-Flash SS (Stainless Steel Fabric Flashing) by York Mfg. is also acceptable. A single sheet of 304 stainless steel bonded on the bottom side to a layer of polymeric fabric. Corners and end dams of 26 gauge stainless steel.
2. All laps/penetrations in flashing shall be sealed with products acceptable to flashing manufacturer to provide complete flashing assembly.

3. The installation of thru-wall flashing shall be inspected as specified in Section 040513.
4. Thru-wall flashing shall extend vertically onto back-up wall construction minimum of 16" high (minimum of 8" where 16" is not possible).

B. Prefinished Aluminum Shop Fabricated Items: Shall be fabricated from .050" thick aluminum 6063-T5 alloy, unless otherwise noted, factory pre-finished with high performance Kynar 500 fluorocarbon resin-based coating, or equivalent, color as selected by the Architect, including "custom" colors as required to match other building materials. Custom colors shall not be limited to a manufacturer's standard "custom" colors, some manufacturers may require an additional clear top coat to prevent certain colors from fading, if color as selected by Architect requires such, Contractor shall provide same at no additional cost. All items shall be in sizes and shapes as shown on the drawings, as required to meet conditions, and/or as required for watertight installation. All corners, transitions and end conditions shall be prefabricated mitered and heliarc welded into a watertight integral unit. Shop fabricated items shall include the following with all necessary cleats, closures, anchors, expansion, and splice plates:

1. Shingle Roof Drip Edge: Minimum dimensions: 1-1/2" drop onto fascia x 3" leg onto roof.
2. Trim Sheet formed to wrap wood trim, etc.
3. Rooftop Equipment Flashing: for all mechanical penetrations in shingle roofing: fabricate and install flashing in accordance with SMACNA Figures 4-20A and/or 4-20B (Formerly Figures A or B on Plate 71, except extend flange onto the roof a minimum of 8").
4. Gutters: Seamless, K-Style profile as detailed and/or manufactured standard profile as approved by Architect, minimum 0.040" Aluminum.
5. Downspouts: shape and size as shown on drawings and/or as required to meet conditions. Finish color of downspouts shall be as selected by Architect to either match gutters and/or wall finish of each location.
6. Gutter and Downspout System:
    a. Provide all necessary brackets and supports, eave tubes, closures, transition and corner pieces, anchors, and expansion and splice plates as recommended by SMACNA and as required for a complete and watertight installation. Interior of gutter splices shall be sealed. Furnish and install water diverters in gutters at all roof valley locations.
        1) Acceptable Reinforced Liquid Flashings for sealing gutter joints:
            a) Firestone's UltraFlash
            b) Soprema's Alsan
        2) Gutter Brackets/Anchors: Aluminum Quick Screw Hidden Hanger Type (heavy gauge). Profile includes snap over back of gutter with integral fastener angled guide and front interlocks with lip of front of gutter. Provide with non-corrosive screws of sufficient length to penetrate through fascia, vent space, and into solid wood blocking. Hangers shall be mill finish aluminum. Gutter shall be secured to roof edge by brackets and anchors, maximum 2 feet on center.
        3) Downspout Straps: shall be minimum .032" thick x 1 1/2" wide aluminum, color to match downspout. Downspouts shall be anchored to wall with straps spaced maximum 4 feet on center.

C. Continuous Strip Vent: Shall be Cor-A-Vent S-400, 1" wide x 1-1/2" high, provide 2 layers. Color as selected by Architect from manufacturer's standard colors.

D. Flexible Pipe Boots for vent pipe roof penetrations: Deckmate by Portals Plus, Inc., of compression molded rubber.

1) Where prefabricated pre-molded vent pipe seals (flashing boots) are used they shall be modified to accommodate roof slope and include stainless steel clamping rings.

E. Soffit Panels: Shall be V-Groove Soffit VS-05 soffit panel system as manufactured by Dimensional Metals, Inc. (DMI), Reynoldsburg, OH. Panels fabricated from 0.032” thick prefinished aluminum and feature an integral interlocking system without clips. Interlocking edges and V-groove at center of 12” wide panels provide 3/8” depth to panels. Where ventilated panels are called for, panels shall be perforated for 20% free air permeation. Finish shall be 70% PVDF Fluorocarbon coating, color as selected by Architect from manufacturer’s standard colors. Provide all other trim (receiving channels, fixture mounting accessories, etc.) and fasteners as required for complete soffit installation. All trim shall be same material and finish as soffit.

1. Additional acceptable products include the following:
    a. Series E375 Soffit Panel as manufactured by Englert Inc.
    b. PAC-750 Soffit Panels as manufactured by PAC-CLAD Petersen Aluminum

F. Splash Blocks: Shall be 30" long x 12” wide x 3” high at one end and 1 1/2” high at open end, weighing approximately 49 pounds. Color shall be as selected by Architect from manufacturer’s standard colors. Acceptable manufacturer’s include but are not limited to: Modern Precast, Inc., Salt Lake City, UT; and/or Midwest Manufacturing (splash blocks; 2"H x 12"W x 24"L with integral trough to direct water away from building, weighing approximately 30 pounds).

2.02 FABRICATION

A. General: Fabricate sheet metal flashing and trim to comply with drawing details and recommendations in SMACNA's Architectural Sheet Metal Manual", including, but not limited to, design, dimensions, and other characterizes of each item.

1. All edge flashings shall be provided with end closures as required.
2. All flashings shall be locked, sealed with caulking, and/or welded/soldered to provide watertight system.
3. All flashing shall have a minimum 3/4” hemmed edges in exposed locations.
4. All flashings shall be provided with strippable film to be removed upon installation.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation of thru-wall flashing is specified in Section 042000.

B. All workmanship shall be first class, in accordance with standard code of the SMACNA. Nailing shall be confined to specific applications indicated on the drawings.

1. Roofing work shall also be in accordance with recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual".

C. Surfaces to which sheet metal is applied shall be even, smooth, reasonably clean and free from all defects which might affect the application.

D. Where dissimilar metals are in contact apply a coat of bitumastic paint between metals to prevent electrolytic action.

E. All exposed fasteners required for metal flashing shall be non-corrosive with EPDM or rubber washers.

F. Joints (if not interlocking) of all metal flashing shall be lapped and sealed with material as specified in

Section 079200.

G. Joints of metal flashing to dissimilar materials shall be sealed as specified in Section 079200.

H. Gutter Verification: At final inspection of all work, Contractor shall verify that all gutters, downspouts, etc., shall be in an acceptable working condition.

END OF SECTION 076200

SECTION 079200 - JOINT SEALANTS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the joint sealant work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:

1. Caulk joints at expansion joint materials at all expansion joints of sidewalks, curbs and at intersections of walks and curbs, walks and buildings, walks and stairs and other like occurrences.
2. Caulk joints between door and window frames and wall construction.
    a. For existing openings where existing doors and/or windows have been removed and new are to be installed, clean off all existing caulking prior to installing the new unit and applying finish sealant as herein specified.
    b. Clean out and re-caulk around existing door frames.
3. Caulk around louvers and grilles.
    a. Clean out and re-caulk around existing louvers and grilles.
4. Caulk all building (wall/floor/ceiling) control joints and expansion joints where caulking is shown or required.
5. Caulk joints between door frames and finish flooring (except carpet).
6. Caulk all joints at the juncture of masonry walls with all dissimilar materials.
7. Caulk all joints at the juncture of wall boards with dissimilar materials.
    a. Caulk all joints between floor and the bottom edge of all wallboards with sealant bead (3/8" high) to prevent accidental spills or cleaning substances from wicking up into the wall.
8. Caulk the juncture of tile walls with all dissimilar materials.
    a. Caulk all joints between finished flooring and the bottom edge of wall tile (except locations of coved tile base meeting tile floors).
9. Clean out and re-caulk existing masonry control joints and expansion joints as follows:
    a. Interior masonry control joints in areas receiving finish paint.
    b. Exterior masonry control joints.
10. Clean out and re-caulk all other joints so indicated on drawings or specified under other sections of these specifications.
11. Caulk all roof flashing and/or metal counterflashing terminations where caulking is shown or required.
12. Caulk butt joints of frameless glass panels and joints between frameless glass panels and wall construction.
13. Caulk perimeter of window stools and/or countertops to walls/windows.
14. General: For all locations where new caulking is to be installed where caulking may already exist: Clean off all existing caulking from all adjacent surfaces, prior to installing new finish sealant as herein specified.
15. Caulk all other joints between finish materials as directed by Architect.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 QUALIFICATIONS

A. All work covered by these specifications, including the application of the joint back up material and the installation of all sealants and caulks shall be performed by a professional sealant contractor who has had at least five (5) years of field experience in the caulking business.

B. Sealant shall be tested by the sealant manufacturer for compatibility with the materials to which it will be bonded.

1.04 STANDARDS

A. Materials and installation shall meet requirements and recommendations of applicable portions of the following American Society for Testing and Materials (ASTM) Standards listed:

1. Perform work in accord with ASTM C1193-16 “Standard Guide for Use of Joint Sealants”.
2. Generally sealants shall comply with ASTM C920 “Standard Specification for Elastomeric Sealants”; except certain interior sealants may comply with ASTM C834 “Standard Specifications for Latex Sealants”.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Color samples: Cured samples of each of the manufacturer's standard color charts shall be submitted.

C. Prior to the application of any material the Contractor shall submit Material Safety Data Sheets for all products to be used on the project.

1.06 PRODUCT DELIVERY AND STORAGE

A. Delivery of materials shall be in the manufacturer's original unopened container, clearly identifying each product specified, relating it to the product literature submitted.

B. Storage shall be in accordance with manufacturer's recommendation, with proper precautions concerning shelf life, temperature, humidity and similar storage factors ensuring the fitness of the material when installed.

C. Deliver, store and handle all materials to prevent inclusion of foreign materials and damage of materials by water and breakage. Do not use packages or materials which show evidence of damage.

1.07 GUARANTEE

A. Guarantee that specified work shall be free from defects of materials, workmanship for five (5) years from date of final payment of the project.

B. Repair, replace only such defective work which becomes defective during guarantee term, without extra cost to the Owner.

C. The following types of failures will be adjudged defective work; leakage, hardening, cracking, crumbling, melting, shrinking or running of caulking, or staining of adjacent work by caulking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Paragraph 2.02 “Materials” lists sealant products intended for specific application types for this Project. Product names as listed are as manufactured by the following, unless otherwise noted:

1. Tremco Sealant/Weatherproofing Division of RPM International, Inc. (Tremco, Beechwood, OH)
2. Sonneborn Building Products, a BASF Building Systems Brand
3. Sika Corporation
4. Bondaflex, Clifton, NJ
5. Pecora Corporation, Harleysville, PA

2.02 MATERIALS

A. Sealants shall consist of the following application types and products:

1. Exterior Traffic Bearing Sealant: Shall be two-component, self leveling polyurethane. Acceptable products include the following:
   a. Sonolastic Paving Joint Sealant SL-2 or SL-2 Fast Cure by Sonneborn; or
   b. Tremco self-leveling THC-901 two-component or semi-SL Vulkem 45SSL single component; or
   c. Sikaflex-2c SL by Sika; or
   d. Pur 2 SL by Bondaflex.
2. Exterior Sealant: Shall be multi-component polyurethane sealant. Acceptable products include the following:
   a. Dymeric 240FC by Tremco; or
   b. NP-2 by Sonneborn; or
   c. Sikaflex-2c NS by Sika; or
   d. Pur 2 NS by Bondaflex; or
   e. DynaTrol II by Pecora.
3. At the Contractor’s option, the following one-component polyurethane sealant products are also acceptable Exterior Sealants:
   a. MasterSeal NP 1 (formerly Sonolastic NP-1) by Sonneborn,
   b. Dymonic FC or Dymonic 100 by Tremco.
4. At the Contractor’s option, the following silicone sealant may be used at perimeter of windows in lieu of two or one component polyurethane sealants specified above.
   a. Dow Corning 795 Silicone, 1 part
   b. Additional products may be considered upon shop drawing review; product data must state it’s cured hardness, dirt resistance, and that the liquid components will not bleed out over time and stain adjacent construction.
5. Interior Sealant, except as otherwise listed below: Shall be acrylic latex sealant. Acceptable products include the following:
   a. Tremflex 834 or Dymonic FC by Tremco; or

b. AC-20 +Silicone by Pecora, or
c. DAP Alex Painter's Acrylic Latex Caulk.

6. Interior Sanitary Sealant: Joints in toilet room countertops, joints between plumbing fixtures and adjacent materials, and/or joints in wet areas where mold and mildew growth needs limited shall be sealed with one part, silicone sealant. Acceptable products include the following:
   a. Tremsil 200 by Tremco (1-part silicone); or
   b. SIL 100GP by Bondaflex; or
   c. Dow Corning Tub, Tile & Ceramic Silicone - (1 part); or
   d. General Electric clear silicone sealant SCS1700 Sanitary.
7. Interior Traffic Bearing Sealant: For use at control joints in floors of interior exposed concrete slabs, tile, and/or resilient flooring, shall be polyurethane sealant, traffic bearing, and resistant to heel damage. Acceptable products include the following:
   a. SL-2 or SL-2 Fast Cure by Sonneborn (2-component, self-leveling); or
   b. Tremco THC-901 Self-Leveling; or
   c. PUR 35 SL (1-component, pourable) by Bondaflex; or
   d. Sikaflex 2C SL (Self-Leveling) Polyurethane Sealant by Sika.
8. Primers, bond breakers, solvents, cleaning agents and other accessory materials shall be used as recommended in the literature of the manufacturer of the particular sealant or caulking being used.
9. Sealant Backer Rod: Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended by sealant manufacturer for back-up of and compatibility with sealant.
10. Compressible Joint Filler: Shall be willseal 150 (vertical applications) and/or willseal Coreseal (horizontal applications) as manufactured by willseal LLC, Hudson, NH. Filler shall be pre-compressed, self-expanding polyurethane flexible foam impregnated with flame retardant, modified acrylic, designed to seal against rain, wind, sound, draft, and dust. Filler shall allow for 50% joint movement with no adhesive or cohesive stresses.
    a. Additional approved products: Backerseal as manufactured by Emseal Joint Systems.
11. Expansion Joint Filler for Concrete Sidewalks/Curbs: As specified in Section 033000.

B. Colors: Generally, color of sealant shall match as nearly as possible, the adjoining surfaces. The Architect shall have the option to select sealant colors.

C. Cleaner and Surface Prep Solvent: Contractor shall take care to use VOC compliant, non-ozone depleting solvents that are not considered hazardous air pollutants within EPA guidelines. Acceptable products may include, but not be limited to, Dow Corning® Cleaner and Surface Prep Solvent.

PART 3 EXECUTION

3.01 JOINT PREPARATION

A. Thoroughly clean all joints, removing all foreign matter, such as dust, oil, grease, water, surface dirt, and frost. Sealant must be applied to the base surface. All anodized aluminum should be wiped with two-cloth solvent method to remove temporary coatings and surface contaminants. After the surface is wiped dry, prime with product as recommended by sealant manufacturer for sealant to be used. Special coatings such as high-performance paints should be submitted to sealant manufacturer for surface preparation recommendations.

B. Bond breaker shall be applied to backs of joints where no backing materials occur. Apply in uniform strip so sealant cannot bond to back of joint. Do not allow bond breaker on sides of joints. Suggested material shall be polyethylene film.

C. Follow the specific sealant manufacturer's printed recommendations regarding the use of primers on various substrates. Allow primer to become tack free before applying sealant.

D. All joints to receive sealant shall be as herein specified and as on drawings. Do not seal joints until they are in compliance with these specifications and the drawings. The condition of the joints shall receive approval from the Architect before work is begun.

E. For joints widths of 1/4" to 1/2", the depth of sealant shall be 1/4". For joint widths greater than 1/2", the depth of sealant shall be 3/8". For joints exceeding 3/4" in width, depth of sealant shall be as directed by the sealant manufacturer and the Architect.

3.02 INSTALLATION

A. Mix compounds according to manufacturer's recommendation with clean mixing equipment.

B. Install backup material or joint filler of type and size specified at proper depth in joint to provide sealant dimensions as detailed and/or specified. Back up material shall be of suitable size and shape so that, when compressed (25 - 50%), it will fit in joints as required. Sealant shall not be applied without back up material and, if necessary, bond breaker strip. Use specified bond breaker strip between sealant and supporting type back up material. Bond breaker strip shall be used in all joints where sufficient room for back up does not exist.

C. All sealant shall be forced into place by means of a pneumatic pressure gun, using pressure recommended by the manufacturer. Sealant shall fill the entire void and finish even with face of adjacent surface.

D. Do not apply sealant when temperature is below 40°F. In cold weather warm sealant to 60 - 80°F. for ease of application. Joint surfaces shall be dry and free of all foreign materials.

E. Install non-sagging type sealant with sealant gun as soon as possible after mixing, where mixing is necessary. Force sealant firmly into joint, pressing material against back and sides of joints and then filling spaces so no voids occur.

F. Install self-leveling type sealant to previously masked and primed joints as soon as possible after mixing. Do not use partially cured material.

G. Apply sealant to form uniform smooth surface. Tool surface with soapy water or solvent-moistened tool. Do not work surface after skin forms.

3.03 CLEANING

A. Remove excess sealant from surfaces adjoining joints with solvent recommended by sealant manufacturer, before sealant starts to harden; or allow sealant to cure hard, then remove excess by rubbing with a scraper or by cutting neatly with a sharp knife. All finished work shall be left in neat clean condition.

END OF SECTION 079200

SECTION 081100 - HOLLOW METAL (STEEL) DOORS AND FRAMES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the hollow metal door and frame work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Door Hardware - Section 087100.

C. Glazing - Section 088000.

1.03 REFERENCES / STANDARDS

A. Labor, materials, fabrication, and erection shall meet requirements and recommendations of applicable portions of the following:

1. American National Standards Institute, ANSI
2. American Society for Testing and Materials, ASTM
3. American Welding Society, AWS
4. Steel Door Institute, SDI

B. Steel doors and frames shall comply with the following standards, as well as these specifications:

1. ANSI/SDI A250.6 Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
2. ANSI/SDI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; Latest Revision.
   a. SDI 111 - Recommended Standard Details for Steel Doors & Frames.
3. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames (Formerly SDI-105).
4. ANSI/UL 1784 - Air Leakage Tests of Door Assemblies
5. DHI A115.1G - Installation Guide for Doors and Hardware.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide all products from a single manufacturer who is a member of the Steel Door Institute.

1.05 SAMPLES

A. Submit sections of jambs or other items of specified work. Indicate contours, methods of construction, various finishes proposed for use, when directed by the Architect.

1.06 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.

C. Shop drawings shall indicate: Elevations of each door type, details of each frame type, location in building for each item, conditions at openings with various wall thickness and materials, size, shape and thickness of materials, joints and connections.

1. Coordinate door/frame hardware reinforcement with door hardware provided in Section 087100.

D. Doors, frames and frame components shall not be manufactured prior to Architect's approval of shop drawings.

E. Provide evidence of manufacturer's membership in the Steel Door Institute.

1.07 PROTECTION

A. Package and protect finished hollow metal work specified herein. Carefully store hollow metal work at site in upright position, protect from elements on wood blocking in manner to prevent damage, marring of finish.

PART 2 PRODUCTS

2.01 MATERIALS

A. Hollow Metal (Steel) Doors, Frames and frame components, as hereafter specified, shall be manufactured from hot-dipped galvanized steel having a minimum zinc coating weight of 0.6 ounces per square foot (A60); steel shall conform to ASTM A653; galvanizing shall conform to ASTM A924. Acceptable manufacturers and Steel Door Institute Members are as follows: Steelcraft, Cincinnati, OH (an Allegion Company); Ceco Door Products Company, an ASSA ABLOY Group Company, Milan, TN; Curries, an ASSA ABLOY Group Company, Mason City, IA; and Amweld Building Company, Inc., Garrettsville, OH.

2.02 FABRICATION

A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.

B. Best grade of modern shop and field practice known to recognized manufacturers specializing therein. Connections shall be made using welded seams and joints including reinforcements. Fit and fabricate accurately, with surfaces free from warp, wave, buckle and other defects; make all corners and angles square unless otherwise indicated. Set members in proper alignment with surfaces straight and to true plane. Make molds, edges and arrisers straight and sharp, unless coved or bull nosed are indicated. Miters and joints shall be well formed. All joints shall be welded, neat, clean, smooth and flush with surface of base metal. Make exposed face jointing invisible. Units broke down for shipment shall be properly joined, welded and ground smooth by the manufacturer.

C. Dents in frames caused by spot welding shall be filled and ground smooth.

D. Drilling: Drill and tap work as required for hardware attachment and for other indicated attached work. Locate drilling and tapping by template to secure accurate alignment.

E. Glass: As specified in Section 088000. All doors and frames hereinafter specified shall have glass field installed.

2.03 FINISHING

A. Prime finish: Doors and frames shall be thoroughly cleaned and chemically treated to ensure maximum paint adhesion. All surfaces of the door and frame exposed to view shall receive a factory applied coat of rust inhibiting primer, baked-on. The finish shall meet the requirements for acceptance stated in ANSI/SDI A250.10 "Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames."

B. All welding spots and seams shall receive a coat of zinc chromate before prime painting.

C. Each coat shall be applied evenly and baked at proper temperature for time cycle recommended by paint manufacturer to secure maximum protection. Baked primer finishes shall be free from craze, cracks and bubbles.

2.04 CONSTRUCTION OF FRAMES

A. All frames shall be double rabbit as detailed on drawings.
1. Frames for masonry partitions shall be Type "F".
2. Frames for steel stud and gypsum board partitions may be Type "MU" or Type "F".

B. Flush interior frames to be 16 gauge steel and exterior frames to be 14 gauge steel, all as specified in Paragraph 2.01. Frames shall be set-up and arc (SUA) welded, (see Paragraph 2.02.B above), corners shall be mitered. Frames shall have 8 gauge steel hinge reinforcement and prepared for 4-1/2" x 4-1/2" standard or heavy weight template hinges. Strike reinforcement shall be 16 gauge. Reinforcement for surface closer shall be 14 gauge. Provide cutouts and reinforcement as required for other specified hardware. Frames shall be furnished with a minimum of six wall anchors and two base anchors of manufacturers standard design and as required for various wall construction types. All reinforcement and anchors shall be galvanized. Knocked-down (KD) frames will not be accepted.
1. Deliver welded frames with removable spreader bars across bottom of frames, tack welded to jambs. Tack welds shall be totally removed and surface ground smooth, prior to field finish painting of frames.

C. Door Silencers: Except on weather-stripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturers regardless if specified in Section 087100.
1. All new hollow metal door frames shall be supplied with rubber bumpers/silencers.
2. Provide three per strike jamb and two per head for pairs of doors. Bumpers/silencers shall be turned over to painter for installation.

D. Hardware Reinforcements: Prepare frames to receive hardware in accordance with applicable standards of ANSI. Spot weld reinforcing plates to inner surface of frames, hinges, locks, latches and other hardware locations. Drill and tap necessary holes for field installation of hardware from templates furnished to frame manufacturer by hardware contractor. Do no drilling and tapping at factory for application of surface applied hardware.

E. Head Reinforcing: For door openings wider than 42" and multiple openings, reinforce head members full length with 12 gauge steel channel.

2.05 CONSTRUCTION OF DOORS

A. Flush doors shall be full flush seamless construction fabricated from 16 gauge steel ("Level 3 – Extra Heavy Duty" class) as specified in Paragraph 2.01. Interior doors shall be reinforced, stiffened, sound deadened and insulated with impregnated kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels. Exterior doors shall be same construction as interior doors except insulation shall be polystyrene solid core, fully weathersealed. Doors shall have continuous vertical mechanical inter-locking joints at lock and hinge edges with edge seam filled and ground smooth. Tops of all doors shall have "snap-in" steel top cap. Doors shall have 1/8" in 2" beveled hinge and lock edges. Top and bottom steel reinforcement channels shall be 14 gauge and spot welded within the doors. Hinge reinforcement shall be 8 gauge, lock reinforcement shall be 16 gauge and closer reinforcement 14 gauge. Adequate reinforcements shall be provided for other hardware as required. All reinforcements shall be galvanized. Doors shall be prepared for specified hardware only. Non-handed doors will not be acceptable. No field patching of doors will be accepted.

1. Sound Rating for Interior Doors:
   a. STC of 30-32, measured in accordance with ASTM E413.
2. Flush Doors as herein specified shall be equivalent to Steelcraft's LF Series.

B. Provide openings in doors for glazing by others, in sizes as shown on drawings. Provide door reinforcements as required by size of openings. Glazing moldings shall be cold drawn steel with mitered welded corners. Moldings shall be fastened with removable, countersunk oval Phillips head machine screws on room side of door.

1. Provide type of molding as required by thickness of glass scheduled and/or specified in Section 088000.
   a. For lights/panels up to 1/2" thick: Provide recessed steel trim.
   b. For lights/panels greater than 1/2" thick provide flush mounted steel trim.
2. Frames shall be fabricated of 18 gauge prime finished steel with mitered and welded corners and countersunk mounting holes. Acceptable manufacturers include but not limited to: VT Industries (Style 110); and National Guard Products.

2.06 WORKMANSHIP

A. General: Insofar as possible, execute fitting, constructing and fabricating at shop, ready for delivery and erection at buildings.

PART 3 EXECUTION

3.01 INSPECTION

A. Installer must examine substrate and conditions under which steel doors and frames are to be installed and must notify contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION

A. General: Install standard steel doors, frames, and accessories in accordance with final shop drawings and manufacturer's data, and as herein specified.

B. Fully flash all exterior door openings, including sills: As specified in Section 072500.

C. Placing Frames:
1. Comply with provisions of ANSI A250.11 (formerly SDI-105) "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.
2. Except for frames located at in-place concrete or masonry, place frames prior to construction of enclosing walls and ceilings. 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. Frames in metal stud partitions shall be packed with batt insulation as specified in Section 072100. Frames in masonry walls shall be grouted solid.
3. Install at least 4 wall anchors per jamb.
4. Frames shall be set tight to flooring substrate. Maximum allowable gap between flooring and frame shall not exceed 1/8” and gap shall be caulked as specified in Section 079200.

D. Door Installation:
1. Fit hollow metal doors accurately in frames, within clearances specified in ANSI/SDI A250.8 – SDI 100.
    a. Exterior Door Clearances: Perimeter and sill gaps shall be weathertight after installation of weatherstripping specified in Section 087100.

3.03 CLEANING

A. The Contractor shall be responsible for removal of protective materials and cleaning of all metal surfaces in accordance with the door manufacturer's recommendations. Metal shall be prepared to receive finish painting.

END OF SECTION 081100

SECTION 083100 - ACCESS DOORS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the access door work as shown on drawings, as described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Basement access door

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 STANDARDS

A. Workmanship and materials shall meet requirements and recommendations of applicable portions of Standards listed:
1. American Society for Testing and Materials, ASTM
2. American Welding Society, AWS

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.

C. Shop drawings shall indicate: Elevations and details of each frame/door, location in building for each item, conditions at openings with various wall thickness and materials, size, shape and thickness of materials, joints and connections.

1.05 PROTECTION

A. Package and protect finished metal work specified herein. Carefully store metal work at site in upright position, protect from elements on wood blocking in manner to prevent damage, marring of finish.

PART 2 PRODUCTS

2.01 MATERIALS

A. Basement Access Door: Shall be Bilco Classic Series Basement Doors. Field verify type of door required - steel sided for non-sloped sidewall foundations or sloped for foundation walls. Field verify existing foundation size and provide sloped doors to shed water with extensions and accessories as required to suit

existing conditions. Basement Door assembly shall be constructed of .090 - .100 thick steel and supplied with gas spring operators or torsion cam lift system as required for type of door to be provided. Doors and extensions shall have factory powder coat finish in color as selected by the Architect from manufacturer's standard colors. Provide complete with hardware assembly bolts and anchors for securing to masonry. Product shall withstand minimum 200 lb live load.

1. Foundation Plates (if required): Provide bent, steel plates (ASTM A36, Grade 36), hot dipped galvanized after fabrication according to ASTM A123. Field verify width required to suit existing foundation width. All steel hardware (threaded fasteners, bolts, nuts, washers, anchor bolts, etc.) for foundation plates shall be hot dipped galvanized according to ASTM A153.
2. Door Features:
    a. Weathertight: Flanged construction and header design shed water and prevent binding due to ice and snow.
    b. Locking:
        1) Interior Hardware: Slide bolt lock and internal mounting flanges.
        2) Exterior Hardware: Bilco keyed lock kit for exterior access.
    c. Sturdy concealed hinges protected from the weather ensure all-season operation.
    d. Satisfies IRC 2021 Building code requirements for emergency egress in finished basement areas.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive units.

3.02 ERECTION AND PROTECTION

A. Secure all frames, extensions, trim and related items in a neat workmanlike manner. All units to be set plumb, level, square and true to line, in accordance with manufacturer's prescribed tolerances and installation instructions and/or approved shop drawings. Maintain assembly dimensional tolerances aligning with adjacent work. Provide alignment attachments and shims to permanently fasten units to building structure. Where trim members/covers are jointed, they shall be accurately cut and fitted to result in a tightly closed joint.

B. Fill completely all voids between framing and building structure and voids behind trim, covers, etc. with foam-in insulation specified in Section 072100, and seal interior and exterior with sealants as specified in Section 079200 to provide weathertight construction.

C. Attach and adjust all hardware.

D. Leave unit closed and locked.

3.03 CLEANING

A. The erection contractor shall clean up all debris resulting from his work and shall clean off all marks and smudges, repair all damage, replace damaged materials and remove all debris from the job site. The Contractor shall be responsible for the protection of the doors during the course of construction and he shall be responsible for the cleaning all portions of the doors after the painting and finishing of the building is

completed.

END OF SECTION 083100

SECTION 084113 – ALUMINUM WINDOWS & FRAMING

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the aluminum windows and framing work, including perimeter trims, accessories, shims and anchors, and perimeter sealing of units as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Glazing - Section 088000.

1.03 STANDARDS

A. Labor and materials shall meet requirements and recommendations of applicable portions of standards listed.

1. American Architectural Manufacturer's Association, AAMA
2. American National Standards Institute, ANSI
3. American Society for Testing Materials, ASTM

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.

C. Shop drawings shall indicate: Elevations of window type, details of each frame type, location in building for each item, conditions at openings with various wall thickness and materials, size, shape, and thickness of materials, joints and connections (attachment/anchorage to wall construction).

1. Verify actual measurements/openings by field measurements and show recorded measurements on shop drawings.
2. Submit details (fastening, sizes, watertight seal, etc.) for all aluminum trim/covers.

D. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

E. Warranty(s).

1.05 WARRANTY

A. Manufacturer shall furnish a written 20 year painted finish warranty, providing for non-prorated material and replacement cost. Finish shall be warranted by the manufacturer for 20 years against crazing, chipping, cracking, fading, chalking, checking or peeling.

B. Manufacturer shall provide written warranty for specified products against defects for a period of two (2) years from the date of Final Payment of the Project.

1. Exterior Thermally Broken Framing shall also be provided with 10 year warranty against failure of the thermal barrier polymer due to dry shrinkage and fracturing.

1.06 QUALITY ASSURANCE

A. Provide aluminum windows and framing specified herein from a single source manufacturer.

B. Qualifications:

1. Installer Qualifications: Installer experienced to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
3. The architectural aluminum supplier shall have a quality system registered to one of the ISO 9000 series of standards. The quality system shall be certified by a Registrar approved by the Accreditation Board (RAB) or another, international approval authority.
    a. The certificate shall be current and in good standing with the Registrar which issued it.
    b. The supplier shall furnish, upon request, a copy or copies of the current certificate.

C. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

D. Aluminum Framing System Manufacturer's representative shall inspect the work before, during, and after it's installation to determine if frames as herein specified have been installed in accordance with manufacturer's recommendations and approved shop drawings. Inspections shall be scheduled as required by the manufacturer of aluminum frames. Required minimum inspections include the following (costs associated with inspections shall be included in the Contractor's bid):

1. Inspection of substrate prior to installer proceeding with the installation.
2. Progress inspections: minimum of one inspection every two weeks. The Contractor shall provide the Architect with a copy of the aluminum framing manufacturer's In-Progress Inspection Reports.
3. Final inspection upon completion of the aluminum framing systems installation. Upon final inspection a report will be issued to the installer of any discrepancies and requirements for additional work; report shall be copied to the Architect. If additional work required, the manufacturer will provide another final inspection to verify acceptance of completed work.

1.07 PERFORMANCE REQUIREMENTS

A. Performance Requirements of Framing Systems:

1. Air infiltration/exfiltration for all framing shall be tested in accordance with ASTM E 283.

a. Infiltration shall not exceed .06 CFM per square foot at a static air pressure differential of 6.24 psf with interior seal.
b. Exfiltration shall not exceed .045 CFM per foot of crack at a static air pressure differential of 1.57 psf.

2. Water infiltration/resistance: Exterior Framing Systems shall be tested in accordance with ASTM E331 for static resistance, demonstrating no water penetration at test pressure of 8 psf, as defined in AAMA 501:
3. Structural Performance: Structural performance per ASTM E 330 shall be based on a maximum allowable deflection of L/175 of the span and allowable stress with a safety factor of 1.65 when subjected to wind loads as hereafter specified.
4. Thermal Cycling: There shall be no buckling, stress on glass, edge seal failure, excess stress on structure, anchors and fasteners, or reduction in performance when tested in accordance with AAMA 501.5 at a temperature range of 0 °F (-18 °C) to 180 °F (82 °C).
5. Thermal Transmittance for Exterior Framing:
   a. Thermal transmittance due to conduction (Uc) shall be approximately “X” Btu/hour/ft2/°F per AAMA 1503 as follows:
      1) 0.44 Low-E Glass
      2) Values may vary dependent on location of glass: front, center, back.
   b. Condensation resistance factor (CRF) shall be approximately “X” per AAMA 1503 as follows:
      1) 62 Frame; 68 Low-E Glass
      2) Values may vary dependent on location of glass: front, center, back.
6. Seismic: When tested to AAMA 501.4, system must meet design displacement of 0.10 x the story height and ultimate displacement of 1.5 x the design displacement.
7. Wind loads: Provide systems, including anchorage, capable of withstanding wind load design pressures of minimum 90mph Vasd Nominal design wind speed. Minimum wind Loads in psf shall meet the following:
   a. Positive pressure of 28 psf at non-corner zones.
   b. Negative pressure of 28 psf at non-corner zones.
   c. Negative pressure of 35 psf at corner zones.

B. Performance Requirements of Window Framing Operators:
1. Windows shall be in accordance with of ANSI/AAMA/NWWDA 101/I.S.2-97 or NAFS-1for Class and Grade of P-AW-40 for Project Out Windows.
2. Air infiltration shall not exceed 0.06 CFM/FT of vent perimeter at a static air pressure differential of 6.24 PSF, in accordance with of ASTM E283.
3. Water resistance shall be tested at a static air pressure difference of 12 PSF, in accordance with of ASTM E331 and ASTM E547, and there shall be no leakage.
4. Uniform design load test shall be conducted at a minimum static air pressure difference of 40 PSF and 60 PSF shall be applied in the positive and negative direction in accordance with ASTM E330.
5. Uniform load structural test shall be conducted at a static air pressure difference of 40 PSF and 60 PSF shall be applied in the positive and negative direction in accordance with ASTM E330.

1.08 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.

B. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle frame material and components to avoid damage. Protect frame material against damage from elements, construction activities, and other hazards before, during and after frame installation.

PART 2 PRODUCTS

2.01 PRODUCTS/MANUFACTURERS

A. Aluminum Windows and Framing shall meet herein specifications and drawing details.

B. Products/Manufacturers approved for bidding this project, conforming with these specifications and drawing details, include the following, subject to Architect's review of complete submittals. Center set glazing as detailed.

1. Kawneer Company, Inc, Norcross, GA.
   a. Exterior Window Framing – Thermally Broken:
      1) TriFab VG 451T System 2" x 4-1/2"
   b. Window Operators – Thermally Broken:
      1) Glassvent, 2 3/4" deep frame, project-out
2. Tubelite Inc., Walker, MI;
   a. Exterior Window Framing – Thermally Broken:
      1) T14000 Series Flush Glaze Framing, 2" x 4-1/2"
   b. Window Operators – Thermally Broken:
      1) VW3700 (2-3/8" x 2-1/4" deep)
3. EFCO
   a. Exterior Window Framing – Thermally Broken:
      1) EFCO Series 403 (T), 2" x 4 1⁄2" Thermal Storefront Framing
   b. Window Operators – Thermally Broken:
      1) WV430 Storefront Vent System
4. YKK AP America Inc., Austell, GA
   a. Exterior Window Framing – Thermally Broken:
      1) YES 45 FT or TU, 2" x 4 1⁄2"
   b. Window Operators – Thermally Broken:
      1) YES SSG TU Vent

2.02 MATERIALS

A. Aluminum:
   1. All window and framing members and trim molding extrusions shall be 6063-T5 and/or 6063-T6 alloy and temper (ASTM B 221 alloy G.S. 10A-T5).
   2. Finish: All exposed aluminum surfaces of framing and trim shall be free of scratches and other serious blemishes and shall receive a Fluoropolymer Paint Coating that meets or exceeds American Architectural Manufacturer's Association Standard AAMA 2605. Coating shall be minimum 1.2 mils thick. Custom Color, including mica colors, to match other building materials as selected by Architect; note – some manufacturers may require an additional clear top coat to prevent certain colors from fading, if color as selected by Architect requires such, Contractor shall provide same at no additional cost.
      a. Provide Owner with touch up paint to match painted aluminum finish(es).

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive, nonstaining, nonbleeding, and compatible with aluminum framing members, trim hardware, anchors, and other components. Where exposed, fasteners shall be stainless steel.

C. Perimeter Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated. When steel or iron anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Glazing Gaskets:
1. Glazing gaskets for framing: shall be extruded EPDM rubber.

E. Thermal Barriers (Generally): 1/4" separation consisting of a two-part, chemically curing, high density polyurethane which is mechanically and adhesively joined to aluminum frame sections.

F. Glass: As specified in Section 088000. All frames hereinafter specified shall have glass field installed, except Window Operators shall have glass factory installed.

G. Joint Sealants: For installation at perimeter of aluminum-framed systems, see Section 079200.

H. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30 mil (0.762 mm) thickness per coat.

2.03 FRAMING

A. Fabrication of Frames - General:
1. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:
a. Profiles that are sharp, straight, and free of defects or deformations.
b. Accurately fit and secure joints and corners; make joints flush, hairline and weatherproof.
c. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
d. Physical and thermal isolation of glazing from framing members.
e. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
f. Provisions for field replacement of glazing.
g. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

B. Fabrication – Exterior, Thermal Break, Framing:
1. Shall provide for flush glazing on all sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension of 2". Overall depth shall be 4-1/2".
2. All framing members shall incorporate a thermal barrier which eliminates all direct contact between interior and exterior aluminum sections.

C. Trim: All related trim items such as closures, jamb extenders, sills, etc., shall be fabricated of aluminum and provided by the manufacturer so as to form a complete packaged unit for installation. Exposed trim to have same finish as specified above. Where brake metal is used, it shall be approved by

the Architect and shall be a minimum thickness of 1/16" (.0625”). Fastening shall be concealed. Seal exterior joints with sealant as recommended by manufacturer to assure water-tight joints.

1. Sills shall include continuous concealed cleats.
2. Submit shop drawing details for all aluminum covers illustrating fastening, lengths of members, and watertight seal between members.

D. Accessories

1. Provide all required accessories for a complete installation as shown on working drawings or as required for a complete job.
2. Accessories shall include any necessary clip angles and structural mullion reinforcements that may be required for a complete installation.
    a. Reinforcing Members (if/where required): Shall be aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.
3. All frames shall be installed in compliance with IBC 2021 wind loading requirements per Paragraph 1.07.A.7.

2.04 OPERATING VENTS (WINDOWS)

A. Provide thermally broken, project out, concealed (visually frameless) ventilators (windows) where detailed, compatible with type of framing specified. Vent shall be equal to the following:

1. Frames fabricated from extruded aluminum; face x depth dimensions as indicated by manufacturer above. Framing members shall have wall thickness sufficient to meet specified structural requirements. Joints coped, double screw fastened, and sealed (i.e., Mitered-clip, Epoxy & Stake).
2. Sash fabricated from extruded aluminum. Mitered hairline joints mechanically staked to solid aluminum, internal corner keys, and sealed.
3. Factory glaze with 1” thick insulating glass as specified in Section 088000. Glazing shall be as recommended by manufacturer.
4. Frame or vent shall have thermal break construction the same as the frames outline within. Thermal barriers that incorporate gaskets will not be acceptable. Each corner neatly mitered.
5. Frame and ventilator (sash) shall be factory fabricated and assembled.
6. Hardware: 4 bar stainless steel hinges with positive stop, roto operators, strikes, and keepers; all cast white bronze.
    a. All vents opening into sidewalks along the building (ground and/or first floor locations) shall be provided with limit stops to prevent the operator from opening more than 8”.
    b. All hardware fasteners penetrating frame or inside plane of window shall be factory sealed with resilient non-hardening compound.
    c. Fasteners: 300 Series Stainless Steel for all exposed locations.

B. Insect Screens: shall be constructed with extruded aluminum frames, rigidly joined at their corners. Screen cloth shall be 18 x 16 mesh aluminum and shall be cleaned thoroughly to provide a uniform color. Screen frames shall be finished to match aluminum windows. Splines shall be extruded vinyl, removable to permit re-screening. All vents shall be provided with screens. Provide flat screens that are mounted on interior of operators.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive framing systems and sill plate is level in accordance with manufacturer's acceptable tolerances.

1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 INSTALLATION

A. General: Install aluminum frames plumb, level, square and true to line, without warp or rack of frames by experienced workmen in accordance with manufacturer's prescribed tolerances and installation instructions and/or approved shop drawings. Maintain assembly dimensional tolerances aligning with adjacent work. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities. Provide alignment attachments and shims to permanently fasten system to building structure. Secure all trim and related items in a neat workmanlike manner. All fastenings shall be concealed insofar as possible. Provide support and anchor in place. Where moldings are jointed, they shall be accurately cut and fitted to result in a tightly closed joint.

1. Installation of systems, including anchorage, shall be capable of withstanding wind load design pressures as specified in Paragraph 1.07.A.7.
2. Fully flash all window openings, including sills: As specified in Section 072500.

B. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points. All aluminum materials adjoining and coming in contact with mortar, concrete, plaster or other masonry materials shall be given one heavy brush coat of alkali resistant bituminous paint or zinc chromate.

C. Weathertight Construction: Install sill members and other members in a bed of sealant or with joint filler or gaskets, to provide weathertight construction. Coordinate installation with wall flashings and other components of construction.

D. Fill completely all voids between framing and building structure and voids behind trim, covers, etc. with foam-in insulation specified in Section 072100.

E. All joints between framing and the building structure shall be sealed.

F. Adjusting: Adjust window operating hardware for smooth operation.

3.03 PROTECTION AND CLEANING

A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum framing from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants during the course of construction. Remove and replace damaged aluminum framing at no extra cost.

B. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. After glazing and sealing is completed, all aluminum, hardware, and glass shall be clean and free of temporary labels, any visible markings, and dirt. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

C. Clean up all debris resulting from this work. Clean off all marks and smudges and repair/replace all damage to adjacent materials. Remove all debris from the job site.

D. Leave operating windows closed and locked.

END OF SECTION 084113

SECTION 087100 - DOOR HARDWARE

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the hardware work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Regarding hardware herein specified with electrical features and/or requiring electrical interface: This Contractor shall be familiar with the installation requirements of the hardware and shall have reviewed the extent of interface work shown on electrical drawings and/or the sufficiency of the work if shown as "by others"; any additional work required to complete the installation, even if not shown, as well as, any change from that shown, shall be the responsibility of this Contractor. All accessories required for a fully functioning system shall be provided whether all part numbers for same are listed or not.

1. This Contractor shall run all wiring and make all final connections to complete the installation for all electrical items not shown to be wired/connected under the Electrical Contract. All electrical wiring shall be concealed.
2. The General and Electrical Contractors shall coordinate electrified door access with the Owner's Security Integrator Allegheny Safe & Lock. **The General Contractor shall install and program electrified locks.**

C. All door hardware sets scheduled in Part 3, and all required cylinders shall be field verified on site and with the end users by the supplier prior to the submittal of the shop drawings. It is the responsibility of the General Contractor and door hardware supplier to provide all required hardware components to satisfy the intent of the drawings whether or not all required components are illustrated in the schedule or on the drawings.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Metal Doors and Frames - Section 081100.

1.03 CODES AND REGULATIONS

A. Hardware listed or furnished shall meet requirements of federal, state, local and other code authorities having jurisdiction (AHJ), including but not limited to:

1. NFPA (National Fire Protection Association), including but not limited to NFPA 70 (National Electric Code), NFPA 80 (Standard for Fire Doors) & 252, NFPA 101 Life Safety Code (Means of Egress Door Hardware), and NFPA 105 (Smoke and Draft Control Door Assemblies)
2. IBC 2021
3. ANSI A117.1.

B. Remove any item furnished or installed that does not meet code requirements and substitute proper item at no additional cost to Owner.

C. Hardware supplier shall furnish all hardware necessary to meet applicable codes whether indicated on listing or not.

D. All electrical work shall be in accordance with the National Electric Code, NEC.

E. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), “Accessibilities Guidelines for Buildings and Facilities (ADAAG),” ANSI A117.1, FED-STD-795, “Uniform Federal Accessibility Standards.”

1. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
2. Door Closers: Comply with the following maximum opening-force requirements indicated:
   a. Interior Hinged Doors: 5 lbf applied perpendicular to door.
   b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
3. Thresholds: Not more than 1/2” high. Bevel raised thresholds with a slope of not more than 1:2.
4. Adjust door closer sweep periods so that, from open position of 70 degrees, door will take at least 3 seconds to move to 3” from latch, measured to leading edge of door.

F. NFPA 101: Comply with the following for means of egress doors:

1. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
2. Thresholds: Not more than 1/2” high.

G. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.

1. Test Pressure: Positive pressure labeling.
2. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

H. Smoke and Draft Control Door Assemblies: Where smoke and draft control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at tested pressure differential of 0.3-inch wg of water.

1.04 STANDARDS OF MATERIALS

A. The architectural hardware specified indicates a minimum in types, sizes and quality that is to be furnished. Architectural hardware of other manufacturers acceptable by the Architect and the Owner may be considered as an equal providing gauges and type of metal, sizes of items specified are equal to those specified.

B. The Architectural hardware specified indicates an exactness in quality of material, types, article of assembly that is to be furnished. Deviations from the products listed will be basis for the rejection of the material submitted.

C. Hardware bids shall be based upon the materials specified. Substitutions will not be allowed unless submitted in writing, with samples of the items to be substituted, ten (10) days prior to bid opening. Only by

written addendum shall any items be approved for substitution.

D. Standards: All hardware specified herein shall comply with the following industry standards:
   1. ANSI/BHMA (Builders Hardware Manufacturers Association) A156 Standards and Directories for Hardware
   2. Fire Rated Hardware shall be listed by UL (Underwriters Laboratories Inc.)
      a. UL10C – Positive Pressure Fire Tests of Door Assemblies

E. DHI - Door and Hardware Institute

1.05 COORDINATION

A. The General Contractor and architectural hardware supplier shall coordinate with Owner and Architect to verify function of hardware to suit flow of traffic, purpose of each area, and degree of security required, prior to submittal of shop drawings.

B. The General Contractor shall supply the architectural hardware supplier with shop drawings for doors and frames to enable the hardware supplier to verify the dimensions of materials to be furnished and notify the supplier of any changes in the shop drawings which will affect the hardware.

C. Templates shall be issued to the door and frame suppliers for use in preparing doors and frames for hardware items.

D. The architectural hardware supplier shall coordinate his work with the suppliers of hollow metal doors and frames in order that all work may progress at all possible speed.

E. The architectural hardware supplier shall coordinate installation of all electrically operated hardware with the Electrical Contractor. Electrically operated hardware herein specified shall be fully wired and connected by this Contractor/hardware supplier/installer, unless otherwise noted.
   1. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
   2. Coordination shall the Owner’s Security Integrator Allegheny Safe & Lock.
   3. The General Contractor shall install and program electrified locks.

F. Conduct Pre-installation Conference and Keying Conference as specified in Paragraph for Quality Assurances.

1.06 SUBMITTALS

A. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.

B. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.

C. Product Data: Submit manufacturer's catalog cuts, technical data, product specifications, installation instructions, operational descriptions, finishes, and other pertinent information as applicable for each product or material specified.

1. Product Certificates for electrified door hardware, signed by manufacturer: Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
2. Certificates of Compliance:
    a. Certificates of compliance for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
    b. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference.
3. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by qualified testing agency, for door hardware on doors located in accessible routes.

D. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.

E. Samples:
1. Physical and operating samples of hardware shall be submitted if requested by the Architect.
2. Include one representative piece of each item requested, properly tagged for intended use.
3. Samples will be retained by architect until work is nearly completed and then be fully incorporated in the project.

F. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware, as well as coordinate function of hardware with Owner as specified in Paragraph 1.05.A. Field verify all hardware, as specified in Paragraph 1.01.C, prior to submittal of the door hardware schedule. Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:
1. Door Index; include door number, heading number, and Architects hardware set number.
2. Opening Lock Function Spreadsheet: List locking device and function for each opening.
3. Type, style, function, size, and finish of each hardware item.
4. Name, catalog number, and manufacturer of each item.
5. Fastenings and other pertinent information.
6. Location of each hardware set cross-referenced to indications on Drawings.
7. Explanation of all abbreviations, symbols, and codes contained in schedule.
8. Mounting locations for hardware.
9. Door and frame sizes and materials.
10. Name and phone number for local manufacturer's representative for each product.
11. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include how door will operate on egress, ingress, and fire and smoke alarm connection.
12. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

G. The architectural hardware supplier shall submit wiring diagrams for all hardware with electrical features, illustrating a point-to-point diagram of all components. Wiring diagrams shall be coordinated with

the Electrical Contractor where hardware of this Section is interconnected with access/security systems provided by the Electrical Contractor. Include:

1. Wiring Diagrams for power, signaling, monitoring, communication, and control of electrified hardware. Differentiate between manufacturer-installed and field-installed wiring.
2. Details of interface of electrified door hardware and building safety and security systems.
3. Schematic diagram of systems that interface with electrified door hardware.
4. Point-to-point wiring.
5. Risers.

H. Key Schedule: After Keying Conference, provide keying schedule listing levels of keying.

1. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks and cylinders.
2. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
3. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
4. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
5. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
6. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.
7. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.

I. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory prepared for door hardware installation.

J. Contractor shall submit Verification of Final Adjustment of Door Hardware (as specified in Paragraph 3.03.G) with the Contractor's Closeout Submittals as specified in Section 017700. Also, at completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

K. Operation and maintenance manuals for all hardware: Submit as specified in Section 017700 and include the following:

1. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
2. Catalog pages for each product.
3. Name, address, and phone number of local representative for each manufacturer.
4. Parts list for each product.
5. Final approved hardware schedule, edited to reflect conditions as-installed.
6. Final keying schedule
7. Copies of floor plans with keying nomenclature
8. As-installed wiring diagrams ('as-built' point-to-point wiring schematics, door elevation/riser diagrams) for each opening connected to power, both low voltage and 110 volts.
9. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.07 QUALITY ASSURANCE

A. Standards of Architectural Hardware Suppliers: It is a requirement of the firm submitting proposal for this work to have been an established firm for a minimum of five (5) years. This firm must have a qualified member in good standing with Door and Hardware Institute (DHI) and certified as an Architectural Hardware Consultant (AHC) in his employ to handle the details of scheduling and delivery, and to assist with the proper installation of the hardware.

1. Supplier shall also be a recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years, and who is, or who employs an experienced architectural hardware consultant who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor.
2. Architectural Hardware Supplier & Consultant responsibilities include, but are not limited to:
    a. Preparation of door hardware and keying schedules
    b. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
    c. Coordination Responsibility: Coordinate installation of electronic security hardware with Architect and electrical engineers and provide installation and technical data to Architect and other related subcontractors.
    d. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.

B. All products of a similar nature shall be the product of a single manufacturer.

C. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

D. Any description or schedule shown in this section is intended to indicate general quality and type of hardware required for particular opening listed but such description or schedule shall not be construed to denote that no other items or hardware will be required for the project.

1. Intent of Hardware Sets:
    a. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
    b. Where items of hardware aren’t definitely or correctly specified, are required for completion of the Work, submit written statement of such omission, error, or other discrepancy to Architect during the bidding period for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

E. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Should it be determined that hardware as specified in certain locations, due to detail or size of

members to which hardware is to be applied, is unsuitable, provide in lieu thereof proper hardware, similar in operation, equivalent to type specified, sizes specified being considered minimum.

H. Sizes and Weight: Size, weight and quality specified for all hardware is to be considered minimum acceptable.

I. Pre-installation Conference: Conduct conference at Project site, after hardware submittals have been reviewed and prior to installation of any hardware, to ensure proper installation and provide for any adjustments or replacements of hardware as required. In addition to the Project Architect, the General Contractor and his hardware supplier shall attend the Pre-Installation Conference along with the building Owner's Representative and the Electrical Contractor. Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review required testing, inspecting, and certifying procedures.
4. Review sequence of operation of each type of electrified door hardware.
5. Coordinate with Owner to establish “Keying Conference”. Keying Conference to incorporate the following criteria into the final keying schedule document:
    a. Function of building, flow of traffic, purpose of each area and degree of security required.
    b. Plans for existing and future key system expansion.
    c. Requirements for key control storage and software.
    d. Installation of permanent keys, cylinder cores and software.
    e. Address and requirements for delivery of keys.

J. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing both standard and electrified hardware 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.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware). Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.

1.08 PRODUCT DELIVERY, HANDLING AND STORAGE

A. Packing and Marking:

1. Pack items of hardware in boxes, each box plainly marked, listing items enclosed and opening for which intended.
2. Provide proper type and number of screws for each item of hardware.

B. Protection: Provide necessary protection of all items of architectural hardware to insure that knobs, handles, pulls, push plates, panic bolts, and all other hardware are properly covered so as to protect finish until completion of building.

1.09 ADJUSTMENT OF HARDWARE

A. Prior to final inspection, the hardware supplier shall inspect and adjust door closers and locks and other items requiring close adjustment for proper performance. All keying shall be checked for proper operation. All cost shall be included in Hardware Supplier's bid.

1.10 WARRANTIES

A. Contractor/Manufacturers shall furnish the Owner through the Architect the following extended warranties (beyond the minimum one-year warranty). Warranties shall begin on the date of final payment. Warranties shall include labor and materials.

1. Three years for mortise locks and latches.
2. Three years for exit hardware.
3. Twenty five years for manual surface door closers.
4. Lifetime for continuous hinges.
5. Lifetime for key blanks.
6. Note: manufacturers with standard warranties greater than any of the above shall provide their standard product warranty.

B. Warranty Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

1.11 MAINTENANCE SERVICE

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.

B. Continuing Service: For the duration of all warranty period(s), provide full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hardware herein specified and scheduled has been selected from following manufactures as established criteria for type, function, finish and quality. Unless otherwise specified, hardware equal to this criteria will be considered when submitted in conformance with contract documents.

	Item	Manufacturer	Manufacturer's Abbreviation as scheduled in Paragraph 3.04
1.	Continuous hinges	IVES	(IVE)
2.	Butts hinges	IVES	(IVE)
3.	Lock/latches, deadbolts	Schlage	(SCH)
4.	Cores/Cylinders	Schlage	(SCH)
5.	Exit devices	Falcon	(FAL)
6.	Door closers	LCN	(LCN)
7.	Push plates/pulls/bars	IVES	(IVE)
8.	Power transfers	Von Duprin	(VON)
9.	Gasketing	Zero	(ZER)
10.	Thresholds	Zero	(ZER)
11.	Protection plates	IVES	(IVE)
12.	Wall bumpers/stops	IVES	(IVE)

13.	Door/frame electrified harness	Schlage	(SCH)
14.	Overhead stop	Glynn-Johnson	(GLY)

B. The Owner requires use of certain products for their unique characteristics and particular project suitability to ensure continuity of existing and future performance and maintenance standards.

1. Where “No Substitute” is noted in the following “materials”, submittals and substitution requests for other products will not be considered.
2. Approval of manufacturers and/or products other than those listed as ”Scheduled Manufacturer ” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.
    a. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.
3. Additional manufacturers desiring approval of hardware of equal quality/design must submit the “Substitution Request Form” from Section 012513.25 according to requirements of Section 012513 to be considered for approval by the Owner/Architect during bidding.
3. Hand of Door: Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
4. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Butt Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
    a. Two Hinges: For doors with heights up to 60”.
    b. Three Hinges: For doors with heights 61 to 90”.
    c. Four Hinges: For doors with heights 91 to 120”.
    d. For doors with heights more than 120”, provide 4 hinges, plus 1 hinge for every 30” of door height greater than 120”.
2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
    a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
    b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.
3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
    a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
    a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for Out-swinging lockable doors.
5. Manufacturers:
    a. Scheduled Manufacturer: Ives (IVE).
    b. Acceptable Manufacturers: Hager.

B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge with minimum 0.120” thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4”.

Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:
    a. Scheduled Manufacturer: Ives (IVE).
    b. Acceptable Manufacturers: McKinney Products; Bommer Industries.

C. Cylinders and Keying
1. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
2. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer.
    a. Manufacturers:
        1) Scheduled Manufacturer: Schlage Lock Company
        2) Acceptable Manufacturer: Sargent Lock Company, Best Lock Company
3. Cylinders: Original manufacturer cylinders complying with the following:
    a. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
    b. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
    c. Bored-Lock Type: Cylinders with tailpieces to suit locks.
    d. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
    e. Keyway: Manufacturer’s Standard
4. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
    a. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
5. Keying System: Each type of lock and cylinders to be factory keyed.
    a. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements. Incorporate decisions made in keying conference, and as follows:
        1) Master key or grand master key locks as directed by Owner.
    b. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
6. Key Quantity: Provide the following minimum number of keys:
    a. Change Keys per Cylinder: Two (2)
    b. Master Keys (per Master Key Level/Group): Five (5).
    c. Construction Keys (where required): Ten (10).
7. Key Registration List (Bitting List):
    a. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
    b. Provide transcript list in writing or electronic file as directed by the Owner.
8. Construction Keying: Provide construction master keyed cylinders.
9. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project. Owner will index keys in cabinet
    a. Acceptable Manufacturers: Lund Equipment; MMF Industries; Telkee.

D. Mechanical Locks and Latching Devices: Cylindrical Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.2, Series 4000, Operational Grade 1. Locksets to be manufactured with a corrosion resistant, steel case and be field-reversible for handing without disassembly of the lock body.

1. Manufacturers:
    a. Scheduled Manufacturer: Schlagr (SCH) – ND Series.
    b. Acceptable Manufacturers: Best Lock Co. 9K Series, Sargent 10-Line Series.
2. Lock Trim Design: As specified in Hardware Sets.

E. Lock and Latch Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Standards: Comply with the following:
    a. Strikes for Mortise Locks and Latches: BHMA A156.13.
    b. Strikes for Bored Locks and Latches: BHMA A156.2.
    c. Strikes for Auxiliary Deadlocks: BHMA A156.5.
    d. Dustproof Strikes: BHMA A156.16.

F. Conventional Exit Devices
1. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
    a. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
    b. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
        1) Fire Exit Removable Mullions: Provide keyed removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252. Mullions to be used only with exit devices for which they have been tested.
    c. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
    d. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is not acceptable except in any case where the door light extends behind the device as in a full glass configuration.
    e. Flush End Caps: Provide heavy weight impact resistant flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.
    f. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
        1) Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets. Provided free-wheeling type trim where indicated.
        2) Where function of exit device requires a cylinder, provide an interchangeable core type keyed cylinder (Rim or Mortise) as specified in Hardware Sets.

g. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as Less Bottom Rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
h. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
i. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
j. Rail Sizing: Provide exit device rails factory sized for proper door width application.
k. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

2. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified exit devices, furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature.
   a. Manufacturers:
      1) Scheduled Manufacturer: Falcon Exit Devices (FAL) – 24/25 Series.
      2) Acceptable Manufacturers: Sargent – 80 Series, Detex – Advantex Series.

G. Door Closers
1. All door closers specified herein shall meet or exceed the following criteria:
   a. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
   b. Standards: Closers to comply with UL-10C and UBC 7-2 for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
   c. Cycle Testing: Provide closers which have surpassed 10 million cycles in a test witnessed and verified by UL.
   d. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
   e. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
      1) Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.
      2) Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
      3) Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
      4) Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.
   f. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt or security type fasteners as specified in the door Hardware Sets.
2. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be

rack and pinion type, aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

a. Manufacturers:
   2) Scheduled Manufacturer: LCN (LCN) – 4050A Series.
   3) Acceptable Manufacturers: Norton 7500 Series.

H. Architectural Trim/Door Protective Trim:
   1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
   2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1” LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
   3. Metal Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), beveled on four edges (B4E), fabricated from the following.
      a. Stainless Steel: 300 Series, .050” thick, with countersunk screw holes (CSK).
   4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
   5. Metal Door Edging: Door protection edging fabricated from a minimum .050” thick metal sheet, formed into an angle or "U" cap shapes, surface or mortised mounted onto edge of door. Provide appropriate leg overlap to account for protection plates as required. Height to be as specified in the Hardware Sets.
   6. Manufacturers:
      a. Scheduled Manufacturer: IVES (IVE).
      b. Acceptable Manufacturers: Trimco.

I. Door Stops and Holders
   1. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
   2. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
      a. Manufacturers:
         1) Scheduled Manufacturer: IVES (IVE).
         2) Acceptable Manufacturers: Trimco: Burns Manufacturing.
   3. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 Certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
      a. Acceptable Manufacturers:
         1) Scheduled Manufacturer: Glynn-Johnson (GLY).
         2) Acceptable Manufacturers: Rixson; Sargent Manufacturing.

J. Architectural Seals
   1. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

2. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
   a. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
3. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
   a. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.
4. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
5. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
6. Manufacturers:
   a. Scheduled Manufacturer: Zero International (ZER).
   b. Acceptable Manufacturers: National Guard, Reese Enterprises, Inc.

K. Electronic Accessories
1. General Requirements (All electrified hardware and/or accessories): All wiring and connections of door hardware components between each other and back to junction box provided by Electrical Contractor shall be by the hardware installer. All wiring shall be concealed. All accessories required for fully functioning system shall be provided whether all part numbers for same are listed or not.

L. Provide keepers for all locks and strikes for all catches. Provide all escutcheons and plates required.

2.03 FINISHES

A. Finish: as specified and scheduled, except as follows:
1. Door Closers: Powder Coat to match adjacent hardware and/or finish of door as selected by Architect, including any surface visible through door glass from the opposite side of door.
2. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.
3. Architect shall have option to change finish of specified hardware as required to match selected finish of doors/frames and/or as required to match existing hardware, at no additional cost to the Owner.
4. Designations used in Hardware Group Schedule - Paragraph 3.03 to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products. Abbreviations include, but may not be limited to:

Code/Abbreviation	Description
A or AA	Aluminum
626	Satin Chromium Plated
628	Anodized Dull Aluminum
630	Satin Stainless Steel
652	Chromium Plated, Dull
689	Aluminum Painted
BK	Black

4. 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.
5. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

2.04 FASTENINGS

A. Anchor thresholds using galvanized expansion shields or lead tamp-ins and flat heads stainless steel machine screws.

B. Fasteners
1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
2. Furnish screws for installation with each hardware item. 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 including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units exposed when door is closed except when 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 thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

C. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.
1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine specifications, drawings and job conditions to determine quantities and types of hardware required to complete project.
1. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

B. Except for items of hardware specifically furnished under other sections of specifications, furnish and install all items of hardware required to complete project. Providing such items of type and quality suitable for service required and comparable to adjacent hardware.

C. Ensure that all hardware furnished fits part of work for which it is intended. Check details, other drawings and field conditions to assure hardware meetings conditions of work in various locations.

3.02 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.03 INSTALLATION

A. Finish hardware shall be fitted and installed in doors and shall be protected from damage. Hardware

shall be fitted prior to the application of painter's finish; removed during the finishing operation and reset after the completion of the finish except for the last coat. All hardware shall be protected by wrappers of tough paper or cloth maintained in place until acceptance of the work, and shall be left in perfect working order at the time of acceptance of the work, when all keys shall be delivered to the Owner (or a designated representative of the Owner).

1. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use “Riv-Nuts” or similar products.

B. Install hardware in accordance with best trade practice and manufacturer's instructions and recommendations, exercising care not to damage adjacent work. Repair or replace damaged work to satisfaction of Architect. Installation guidelines include, but are not limited to:

1. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
2. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
3. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30” of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
4. Wiring: Coordinate with Electrical Contractor
5. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect.
6. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Section 079200.
7. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.
8. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
9. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
10. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

C. Location of Hardware: Unless otherwise indicated, specified or required to conform to handicapped requirements, locate hardware on doors as follows:

1.	Locks, latches, roller latches and double handle sets:	Centerline of lock strike 40-5/16" from finish floor slab.
2.	Cylindrical or mortise deadlocks:	Centerline of strike 48” from floor slab.
3.	Push plates:	Centerline 45" from finished floor slab.
4.	Pulls:	Centerline of grip 42" from finished floor slab.
5.	Combination push bar:	Centerline 42" from finished floor slab.
6.	Hospital arm pull:	Centerline of lower base is 45" from finish floor slab with grip open at bottom.
7.	Panic devices:	Centerline of strike 40-5/16" from finished floor slab.
8.	Hospital latches for push-pull doors:	Centerline of latch front and strike 45-3/4" from finished floor slab.
9.	Top hinge:	Up to 11-3/4" from rabbet section of head of frame to centerline of hinge.
10.	Bottom hinge:	Up to 13" from finished floor slab to centerline of hinge.
11.	Intermediate hinge(s):	Equally spaced between top and bottom hinge.

12. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
    a. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
    b. DHI TDH-007-20: Installation Guide for Doors and Hardware
    c. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
13. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

D. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

F. Cleaning and Protection
1. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
2. Clean adjacent surfaces soiled by door hardware installation.
3. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

G. Adjust and Clean
1. Check and adjust 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 as intended for the application made.
    a. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
2. Clean adjacent surfaces soiled by hardware installation.
3. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work 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.
    a. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
    b. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
    c. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
    d. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
4. Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware

finishes, during the final adjustment of hardware.

a. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

5. Hardware Supplier's Architectural Hardware Consultant shall inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.
6. Occupancy Adjustment: Approximately three months after Owner's regular occupancy of building, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.03 HARDWARE GROUP SCHEDULE

Follow Hardware Group/Set Numbers List Hardware Required Per Door Opening:

A. Catalog Numbers as listed herein may include codes representing functions, series, etc. Codes include, but may not be limited to the following:

Code	Description
CD	Cylinder Dogging
B4E	Beveled 4 Edges - Kick Plates
RP3	Rings-7 Pin Mortise
S300	Std. Strike - Rim and Top of Svr Devices
7/8"LTC	7/8" Lip-To-Center Strike
C-SUNK HOLES	Counter Sinking of Kick and Mop Plates

B. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

C. Quantities listed are for each pair of doors, or for each single door.

	Quantity/Description	Model Number	Finish	Manufacturer
D.	Hardware Group No. 01			
	3 EA HINGE	5BB1 4.5 X 4.5	652	IVE
	1 EA ENTRANCE LOCK	ND53HD RHO	626	SCH
	1 EA FSIC CORE	23-030	626	SCH
	1 EA WALL STOP	WS406/407CCV	630	IVE
	1 EA GASKETING	488SBK PSA	BK	ZER

E. Hardware Group No. 02

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR		
			ND40S RHO OS-OCC	626 SCH
1	EA	FSIC CORE	23-030	626 SCH
1	EA	SURFACE CLOSER	4050A EDA	689 LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630 IVE
1	EA	WALL STOP	WS406/407CCV	630 IVE
1	EA	GASKETING	488SBK PSA	BK ZER

F. Hardware Group No. 03

3	EA	HINGE	5BB1 4.5 X 4.5	652 IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR		
			ND40S RHO OS-OCC	626 SCH
1	EA	FSIC CORE	23-030	626 SCH
1	EA	SURFACE CLOSER	4050A RW/PA	689 LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630 IVE
1	EA	WALL STOP	WS406/407CCV	630 IVE
1	EA	GASKETING	488SBK PSA	BK ZER

G. Hardware Group No. 04

1	EA	CONT. HINGE	224HD	628 IVE
1	EA	PANIC HARDWARE	CD-25-R-NL-OP	626 FAL
1	EA	RIM CYLINDER	20-057 ICX	626 SCH
1	EA	MORTISE CYLINDER	26-091 ICX	626 SCH
2	EA	FSIC CORE	23-030	626 SCH
1	EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316 IVE
1	EA	SURFACE CLOSER	4050A SCUSH	689 LCN
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630 IVE
1	EA	GASKETING	188SBK PSA	BK ZER
1	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	655A	A ZER

H. Hardware Group No. 05

1	EA	CONT. HINGE	224HD	628 IVE
1	EA	CONT. HINGE	224HD EPT	628 IVE
1	EA	POWER TRANSFER	EPT10 CON	689 VON
1	EA	CONST LATCHING BOLT	FB51P	630 IVE
1	EA	ELEC PANIC HARDWARE	RX-MEL-25-C-C-718-CON 24 VDC	626 FAL
1	EA	RIM CYLINDER	20-057 ICX	626 SCH
1	EA	MORTISE CYLINDER	26-091 ICX	626 SCH
2	EA	FSIC CORE	23-030	626 SCH
1	EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316 IVE
1	EA	COORDINATOR	COR X FL	628 IVE
2	EA	MOUNTING BRACKET	MB	689 IVE
2	EA	SURFACE CLOSER	4050A SCUSH	689 LCN
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630 IVE
1	EA	GASKETING	188SBK PSA	BK ZER
2	EA	MEETING STILE	155AA	AA ZER
2	EA	DOOR SWEEP	39A	A ZER
1	EA	THRESHOLD	655A	A ZER
2	EA	WIRE HARNESS	CON-XX AS REQUIRED	SCH
1			CARD READER by Electrical Contractor	
1			DOOR CONTACT(S) by Electrical Contractor	
1	EA	NOTE	PROVIDE POINT TO POINT WIRING DIAGRAMS	
1	EA	NOTE	PROVIDE RISER WIRING DIAGRAMS	

I. Hardware Group No. 06

1 EA	CONT. HINGE	224HD EPT	628	IVE
1 EA	POWER TRANSFER	EPT10 CON	689	VON
1 EA	VANDL EU STOREROOM	ND96TDEU RHO CON 12V/24V DC	626	SCH
1 EA	FSIC CORE	23-030	626	SCH
1 EA	SURFACE CLOSER	4050A SCUSH	689	LCN
1 EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1 EA	GASKETING	188SBK PSA	BK	ZER
1 EA	DOOR SWEEP	39A	A	ZER
1 EA	THRESHOLD	655A	A	ZER
2 EA	WIRE HARNESS	CON-XX AS REQUIRED		SCH
1		CARD READER by Electrical Contractor		
1		DOOR CONTACT(S) by Electrical Contractor		
1 EA	NOTE	PROVIDE POINT TO POINT WIRING DIAGRAMS		
1 EA	NOTE	PROVIDE RISER WIRING DIAGRAMS		

J. Hardware Group No. 07

3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	CLASSROOM LOCK	ND70HD RHO	626	SCH
1 EA	FSIC CORE	23-030	626	SCH
1 EA	OH STOP	100S	652	GLY
1 EA	SURFACE CLOSER	4050A RW/PA ST-5203	689	LCN
1 EA	MOUNTING PLATE	4050A-18 SRT	689	LCN
1 EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1 EA	GASKETING	488SBK PSA	BK	ZER

K. Hardware Group No. 08

1 EA	CONT. HINGE	224HD EPT	628	IVE
1 EA	POWER TRANSFER	EPT10 CON	689	VON
1 EA	ELEC PANIC HARDWARE	RX-MEL-25-R-NL-OP-CON 24 VDC	626	FAL
1 EA	RIM CYLINDER	20-057 ICX	626	SCH
1 EA	MORTISE CYLINDER	26-091 ICX	626	SCH
2 EA	FSIC CORE	23-030	626	SCH
1 EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316	IVE
1 EA	SURFACE CLOSER	4050A SCUSH	689	LCN
1 EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1 EA	GASKETING	188SBK PSA	BK	ZER
1 EA	DOOR SWEEP	39A	A	ZER
1 EA	THRESHOLD	655A	A	ZER
2 EA	WIRE HARNESS	CON-XX AS REQUIRED		SCH
1		CARD READER by Electrical Contractor		
1		DOOR CONTACT(S) by Electrical Contractor		
1 EA	NOTE	PROVIDE POINT TO POINT WIRING DIAGRAMS		
1 EA	NOTE	PROVIDE RISER WIRING DIAGRAMS		

L. Miscellaneous Hardware
1 KEY CONTROL CABINET

END OF SECTION 087100

SECTION 088000 - GLAZING

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the glass and glazing work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Sizes for glass shall be taken from actual frames and sash. This work contemplates all glass set in place and the Contractor shall assume all responsibility in regard to correct sizes. Sizes, if shown on the drawings are approximate, and shall be used for estimate only.

C. Work includes, but is not necessarily limited to the following:
1. Glass Panels (non-insulated and insulated)
2. All panels and glazing to be field installed in doors and frames

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Metal Doors and Frames - Section 081100.

C. Aluminum Windows & Framing - Section 084113.

1.03 STANDARDS

A. Materials and labor shall meet requirements and recommendations of applicable portions of the following standards listed:
1. American National Standards Institute, ANSI
2. Laminators Safety Glass Association, LSGA
3. Federal Specifications, FS
4. Insulating Glass Certification Council, IGCC
5. Sealed Insulating Glass Manufacturers Association, SIGMA
6. Flat Glass Marketing Association, FGMA
7. American Society for Testing and Materials, ASTM
8. Safety Glazing Certification Council, SGCC

B. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

C. Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with the Safety Glazing Certification Council (SGCC) according to ANSI Z97.1 and testing requirements of Federal Specification CPSC 16 CFR Part 1201 for

category II materials.

D. Insulating Glass Standard: Sealed insulated glass shall be tested and certified in accord with ASTM E2190.

E. Glass shall be graded in accordance with ASTM C1036 Standard Specification for Flat (Annealed) Glass and ASTM C1048 Standard Specification for Heat Treated Flat Glass for Heat Strengthened, Fully Tempered, and/or Ceramic Coated Spandrel Glass. Tempered glass must meet Safety Glazing Standards and be certified when installed in doors and/or enclosures, as well as meeting ASTM C1048. All glass shall bear the manufacturer's label, giving manufacturer's name, quality, weight and thickness.

F. Glass coatings (i.e., low-e coating) shall be in accordance with ASTM C1376, Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

B. Samples: Submit samples, including colors, of each product specified herein.

C. Certificates and Labels: Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements. Separate certification will not be required for glazing materials, except insulating glass units, bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.

1. Insulating Glass Certification Program: Subject to compliance with requirements, provide insulating glass units permanently marked either on spacers or on at least one component pane of units with appropriate certification label of The Insulating Glass Certification Council (IGCC), include certification number, date, and manufacturer’s identification mark.
2. Submit IGCC certification number and related data for insulated glass.
3. Tempered glass panes shall bear manufacturer’s permanent mark (acid etched, sand blasted, etc.) indicating manufacturer and type and thickness of glass.

D. Manufacturer's Warranty on Insulating Glass: Manufacturer shall furnish a written warranty that insulating glass units will not develop manufacturing defects during manufacturer's standard warranty period, but not less than 10 years. Manufacturing defects are defined as failure to hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging at temperature above -20°F. (-28°C), deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and other causes.

PART 2 PRODUCTS

2.01 NON-INSULATED GLASS

A. Clear Float Glass: glazing quality 1/4" thick, free from all defects and tempered.

2.02 INSULATED GLASS

A. Provide insulating glass and glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of insulating glass and glazing materials, and other defects in the work. Manufacturing defects are defined in Paragraph 1.04 under “Warranty”.

B. Insulated Glass Types:
   1. General:
      a. Insulated Glass shall consist of outer and inner panes of 1/4" thick glass, sealed with argon filled air space. Overall thickness of assembly shall be 1”. All panes shall be tempered.
      b. Insulating Glass Spacer - Rigid plastic hybrid stainless steel insulating glass spacer (warm edge spacer): TGI-Spacer M from Technoform Glass Insulation North America, Inc.; Viracon ExtremEdge; or equal. Color as selected by Architect.
   2. Insulated / Tinted Glass: Insulated Glass as specified under Paragraph 2.02.B.1 “General” with outer pane tinted as selected by Architect and assembly shall include Low-E coating. Basis of Design Insulated/Tinted Glass Manufacturer and Performance Values of Assembly shall be equivalent to the following:
      a. Vitro Architectural Glass’s Solarban 60 Solar Control Low-E Glass: Solarban 60 (2) Tint* + Clear, U-value .29 Winter, .26 - .33 SHGC; or Tint* + Solarban 60 (3) Clear; U-value .29 Winter, .25 - .33 SHGC.
      b. *Actual values dependent upon tint selected by Architect. Submit tinted insulated glass assembly samples for Architect’s review, including Vitro Architectural Glass’s Assemblies as follows:
         1) Solarban 60 (2) Solarbronze + Clear
         2) Solarbronze + Solarban 60 (3) Clear
         3) Solarban 60 (2) Solargray + Clear
         4) Solargray + Solarban 60 (3) Clear
      c. Additional approved manufacturers, dependent upon acceptable submittals of representative samples and corresponding data:
         1) Pilkington
         2) Guardian Glass
         3) Other manufacturers’ products, conforming to these specifications and above product performance features, will be considered upon review of submittals of representative samples and corresponding data.

2.03 FABRICATION

A. Sizes: Fabricate all glass panels to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer(s). Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

2.04 GLAZING

A. Glazing materials for setting glass in interior hollow metal frames shall be one component silicone construction sealant, glazing tape, and/or dry glazing gasket as recommended by door or frame manufacturer and as required by Underwriter's Laboratory for fire rated units.

1. Products shall be minimum quality as represented by Spectrum 2 silicone sealant and SST-800 glazing tape as manufactured by Tremco Manufacturing Company.

B. Glazing compounds and tapes to be used in aluminum window frames shall be as recommended by frame manufacturer.

PART 3 EXECUTION

3.01 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes. Install glazing sealants only when temperatures are in middle third of manufacturer's recommended installation temperature range.

B. No sealants shall be applied when the temperature is below 40°F. unless the necessary provisions are made to elevate the temperature in the immediate application area.

3.02 SETTING OF GLASS

A. All glass shall be set in such a way that there will be equal bearing the entire width of each panel, and with proper clearance for contraction and expansion. Glass shall be set without springing. Glass shall be accurately cut to fit the frame and all edges shall be smooth, no sharp edges being left. The Contractor is responsible for broken glass due to improper setting. Set glass with waves running horizontally.

B. Glazing materials shall be used in strict accordance with manufacturer's printed directions and shall be neatly run in straight lines parallel with inside of glazing rebate. Use spacers to insure a uniform thickness of glazing compound.

C. A minimum of 1/8" bed clearance shall be maintained on each side of glass. Tape shall be applied to head, sill and jamb legs. Tape shall be butted together with no laps. Butted corners shall be tightly fit. Tape shall be held down 1/8" from top of glazing leg, the void filled and sloped with sealant as specified. Glass shall be set on neoprene setting blocks at proper spacing for glass size and pressed firmly against tape. A heel bead of sealant shall be applied at the perimeter of the inside of glass maintaining a 3/16" minimum bite on the glass or panel, a positive bond to the sash and completely filling void under the glass or panel. After stops are set and shimmed the void shall be filled with glazing compound.

D. Glazing area of frame shall be dry and cleaned with Xylol to remove all foreign residue and protective coatings before setting of glass. Glass shall be placed on setting blocks and a minimum of one-eighth (1/8) inch spacers placed on each side of glass in glazing channel.

E. Glass in hollow metal frames using glazing beads or stops shall be set in felt channel inserts or bedded in glazing compound, and shall be back and face glazed with glazing compound to prevent rattling. Glazing beads or stops shall be properly reset. Joints shall be watertight.

3.03 BREAKAGE AND CLEANING

A. The Contractor shall protect all glass from injury or breakage and shall assume all responsibility for breakage by whomsoever caused, and shall replace all cracked, broken, scratched or otherwise defective glass when directed to do so by the Architect. All glass shall be cleaned carefully at the time of final acceptance, removing all labels, excess sealant, grease, paint and other foreign substances and leave the work in perfect condition. Glass having scratches or defects which show after cleaning shall be removed and replaced with perfect glass at no cost to the Owner. The Contractor will be held responsible for all glass remaining in acceptable condition until the work has been finally accepted by the Architect and Owner.

END OF SECTION 088000

SECTION 089000 – LOUVERS & VENTS

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the louver and vent work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
   1. Fixed exterior louvers.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 STANDARDS

A. Labor and materials shall meet requirements and recommendations of applicable portions of standards listed.
   1. American Architectural Manufacturer's Association, AAMA

B. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall show gages, profiles, plans, elevations, sections of materials, details of construction, methods of attachment and/or anchoring, all as applicable for specified materials.
   1. Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting of work.
   2. Show weep paths, gaskets, flashing, sealant, and other means of preventing water intrusion.
   3. Show mullion profiles and locations.

C. Finish warranty where required.

D. Samples: Color samples of finishes.

1.05 WARRANTY

A. Provide manufacturer’s warranties as follows:
   1. Manufacturer’s standard finish warranty, but not less than 10 years.

PART 2 PRODUCTS

2.01 PRODUCTS/MATERIALS/MANUFACTURERS

A. Exterior Wall Louvers (as indicated on Architectural Drawings): Shall be extruded aluminum stationary, horizontal blade drainable type louver as manufactured by Architectural Louvers, Cincinnati, OH. Louvers shall be minimum 4" deep, Model E4DS, field verify size to suit existing openings. Blades and frame shall be minimum .080" thick extruded aluminum, alloy 6063-T5. All materials shall be factory finished after assembly with a High-Performance Organic Finish (3-coat fluoropolymer) complying with AAMA 2605 in custom color as selected by the Architect to match other building materials (provide finish warranty).

1. Fasteners: Use types and sizes to suit unit installation conditions, aluminum or 300 series stainless-steel.
2. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
    a. Trim: All related trim items such as closures, base flashing, jamb and/or head trim, etc., shall be fabricated of aluminum and furnished by the manufacturer so as to form a complete packaged unit for installation. Exposed trim to have same finish as louver unit. Where brake metal is used, it shall be approved by the Architect and shall be a minimum thickness of 1/16" (.0625) inch. Fastening shall be concealed. Seal exterior joints with sealant as recommended by manufacturer to assure water-tight joints.
3. Join frame members to each other and to fixed louver blades with fillet welds concealed from view welds, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.
4. Blade Profile: Drainable blade with front gutter for water diversion to jambs
5. Insect Screens: Screen Frames shall be same kind and form of metal as indicated for louver to which screens are attached.
    a. Insect Screening: Aluminum, 16 x 18 square mesh, 0.011-inch (0.28-mm) wire.
6. Louvers manufactured by Construction Specialties, Inc.; The Airolite Company; Air Stream Products, Atoms Architectural Products, Parkersburg, WV, or Greenheck, and complying with these specifications and drawing shapes/sizes are approved for bidding.
    a. Acceptable Greenheck product: Stationary Louver Dual Drainable Blade Model EDD-401.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install items in accordance with manufacturer's instructions and shop drawings, by workmen skilled and familiar with canopy installation.

1. All erection materials shall be supplied by the manufacturer.

B. Fully flash all openings, including sills: As specified in Section 072500.

C. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action. Aluminum that is not organically coated shall be insulated from direct contact with steel, masonry, concrete or non-compatible materials by bituminous paint, zinc chromate primer, non-conductive shims, or other suitable insulating material.

D. Locate and place units plumb, level, straight, true and in proper alignment with adjacent work.

E. Use concealed anchorages where possible.

F. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.

G. Repair damaged finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory and refinish entire unit or provide new units.

H. Work shall be left in a clean condition.

END OF SECTION 089000

SECTION 092116 - WALL BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the wall board assembly work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Interior wall boards, including boards for application of ceramic tile.
2. Screw-type metal support system.
3. Wallboards directly applied to solid substrates.
4. Drywall finishing (joint tape-and-compound treatment).

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

C. Thermal Insulation - Section 072100.

D. Joint Sealants - Section 079200.

1.03 STANDARDS

A. Workmanship and materials shall meet requirements and recommendations of applicable portions of standards listed.
1. American Society for Testing and Materials, ASTM, including but not limited to:
   a. ASTM C1396, Specification for Gypsum Board
2. Gypsum Association, GA.
3. Gypsum Drywall Contractor's International, DGCI
4. Underwriters' Laboratories, UL
5. American National Standards Institute, ANSI

B. Interior non-load bearing framing shall comply with ASTM No.s as specified below. Metal framing shall be manufactured to meet minimum base metal thickness stated in mils, decimal inch, and/or millimeters as specified herein (not gage).

C. The design and installation of members in cold-formed steel light-frame construction shall be in accordance with AISI S200 and IBC 2021 Sections 2211.1 through 2211.7 as applicable.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall show gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, all as applicable for specified materials.

1. Details shall include but not be limited to, all header conditions for openings through metal framed walls.

D. Samples: Submit representative samples of all steel framing components to Architect for approval.

E. Submit steel framing mill reports to the Architect if requested.

1. Due to the fact that the Project is publicly funded in the Commonwealth of Pennsylvania, all steel shall be manufactured in the United States in accordance with the Pennsylvania "Steel Products Procurement Act" [Act 3 (1978); Act 161 (1982); & Act 144 (1984) of the General Assembly of the Commonwealth of Pennsylvania].

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver material in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and in manner to keep them dry, protected from the weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack wallboards flat to prevent sagging.

C. Handle wallboards to prevent damage to edges, ends or surfaces.

D. Protect and store cold-formed metal framing and drywall trim and accessories from corrosion, deformation and other damage during delivery, storage and handing per requirements of AISI's "Code of Standard Practice".

1.06 COMPLIANCE

A. Products / Installation shall meet applicable requirements of governing Authorities and listed Standards.

B. Comply with applicable recommendations and requirements of Standards listed for the application and finishing of Gypsum Wallboard.

C. Follow manufacturer's printed instructions in use of adhesives.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Materials as hereinafter specified by brand names are as manufactured by United States Gypsum Company, except as otherwise noted, and are used to denote type and quality only. Products, complying

with these specifications, manufactured by National Gypsum Company; Georgia-Pacific Corporation; Continental Building Products (formerly LaFarge); and Certainteed a Division of Saint Gobain; are approved for bidding, subject to Architect review of sample products, and data submittals.

2.02 MATERIALS

A. Gypsum Wallboard: All boards shall comply with ASTM C1396. Thickness as noted on drawings. Wallboards shall be Sheetrock Brand Gypsum Panels as manufactured by USG, unless noted otherwise. Products include the following:

1. 5/8" thick Firecode X Panels (UL Type SCX) – for regular and/or fire rated construction
2. Where gypsum wallboard is required on the interior surface of exterior concrete masonry unit walls and/or concrete walls (new and/or existing), provide the following: Sheetrock Brand Mold Tough Firecode X Panels, moisture, mold, and mildew resistant boards.
    a. Do not adhere boards to exterior concrete masonry unit walls and/or concrete walls; install on metal furring as detailed and/or as hereafter specified.
    b. National Gypsum Gold Bond XP Fire Shield is also acceptable.
    c. Do not use as a tile substrate.

B. Cement Board: (for locations to receive wall tile): Shall be a cementitious board complying with ASTM C 1325 and ANSI A118.9. Thickness as indicated on drawings. Approved products:

1. Dens Shield as manufactured by Georgia-Pacific Corporation; or
2. Durock Brand Exterior Cement Board by USG (Cementitious Fiber-Mat Reinforced Sheathing); or
3. PermaBase Brand Cement Board by National Gypsum Co.

C. At the Contractor's option, upon Architect's approval of sample wall finish, the following spray applied products are acceptable in lieu of providing a final continuous skim coat of joint compound and paint primer coat to achieve a GA-214/ASTM C-840 Level 5 gypsum board finish (the "Level 5 Finish" as specified in Paragraph 3.06):

1. Sheetrock® brand Tuff-Hide™ primer-surfacer, vinyl acrylic latex-based coating; or
2. Builders Solution System as manufactured by Sherwin Williams, interior latex primer/surfacer.

D. Joint treatment materials:

1. Gypsum Wallboard (per ASTM C475):
    a. Taping:
        1) Setting type joint compound Sheetrock Brand Durabond "90".
        2) Joint tape (generally paper type)
    b. Finishing: Drying type non-lightweight All Purpose Joint Compound (Sheetrock Brand)
    c. Acceptable National Gypsum Co. "ProForm" products: tape, Quickset 90, and All Purpose Finish.
2. Cement board to receive ceramic wall tile: shall have joints filled with water resistant fill material and tape. Materials may include the following:
    a. Polymer coated glass fiber mesh tape, i.e., Durock Brand Exterior Tape by USG (4" wide), or equal.
    b. Fill Material: Portland Cement Plaster mix consisting of 300-500 pounds white sand to 100 pounds white Portland Cement Type I per ASTM C150; or tile mortar. Do not use joint compound.

E. Fasteners: As approved by board manufacturer for type of framing and finish indicated. Fasteners may

include the following:

1. Corrosion-resistant TYPE S-12 buglehead screws for 20-14 ga. steel framing. 1 3/8" for 5/8" thick board.
2. For Cement Board: Durock steel screws, 1-1/4" or 1-5/8". Screws shall have wafer heads and anti-corrosive coatings.
3. Beam Clips: Where wallboards are attached to structural steel wide flange columns, "The Claw" as seen on the internet at http://clawintl.com/index.php is an acceptable furring attachment to fasten wallboard to.
    a. Also acceptable: Grabber Steel Column & Beam Drywall Clips

F. Laminating adhesive: Drywall adhesive shall be suitable for application to metal and/or wood studs and/or masonry substrate as required, and formulated for VOC (Volatile Organic Compounds) Compliance. Possible products include but are not limited to DAP "Beats the Nail" Construction Adhesive and/or DynaGrip; Liquid Nails Drywall Adhesive DW24; and OSI F38 Drywall Panel Adhesive, part of the Henkel Family of Brands. Adhered applications shall be supplemented with fasteners as recommended by adhesive manufacturer.

G. Steel studs, track, furring channels, etc, shall be in accordance with ASTMs as listed below, formed from steel that corresponds to ASTM A653/A653M and ASTM A1003/A1003M and having a G-60 galvanized coating; equivalent coatings (i.e., "e" and/or "eq") are not acceptable. Products/Manufacturers complying with herein specifications may include: Supreme Structural Stud Series by Telling Industries; Structural Stud Series by ClarkDietrich Building Systems LLC; StudRite Studs by Marino/Ware, ProStud and/or SBP Structural by State Building Products, or approved equal. Steel framing as herein specified references Keynote "9/MS" on drawings.

1. Metal framing shall be manufactured to meet minimum base metal thickness(es) stated in mils per ASTM as hereinafter specified. Decimal inch equivalent for specified mils are as follows:

	Mils	Decimal Inch	ASTM	Gage Reference
a.	33 mils	0.0329"	C645 & C955	20
b.	43 mils	0.0428"	C955	18
c.	54 mils	0.0538"	C955	16

2. Steel studs shall be of size as shown on drawings. Studs and bracing shall be 20 gauge (33 mils), except as follows:
    a. Wall construction above 13'-4" height shall be constructed with 18 gauge members.
    b. Headers/framing for all openings 6'-0 wide and wider shall be constructed with 18 gauge members.
3. Cold formed channels (top and bottom tracks), 16 gauge (54 mils), size as required.
4. Furring (Hat) channels: Type and size as required (7/8" and/or 1 1/2" hat channels as required by details), 20 gauge (33 mils).
5. At the Contractor's option, supplementary framing/blocking/bracing for support of fixtures, equipment, etc., may be minimum 18 gauge (43 mils) steel plate fastened to studs in lieu of wood blocking. Steel backing products as manufactured by Metal-Lite, Inc., providing specified equipment strength(s) when properly installed are acceptable.
6. Headers and Jambs: Manufacturer's proprietary shape used to form header beams and jambs, columns or posts, of web depths required, unpunched, with stiffened flanges and as follows:
    a. Subject to compliance with requirements: Brady Innovations ProX Header®
7. Deflection Track Slotted: Manufacturer's single, deep-leg, U-shaped steel track: punched with vertical slots in both legs.

a. Subject to compliance with requirements: “The System” by Metal-Lite, Inc. or Snap Trak (16 gauge) by Total Steel Solutions

8. Concrete Anchors for fastening steel framing members, clips, connections, etc., to concrete: Shall be "Red Head" concrete anchors as manufactured by Phillips Drill Company of Michigan City, Indiana; Hilti Fastening Systems; DeWalt (formerly Powers Fasteners); or approved equal. The anchor shall be of the self-drilling expansion type made of case hardened and drawn carburizing steel, with self-cutting annular broaching grooves, and having pull-out values as established by Pittsburgh Testing Laboratories. Provide in sizes as required and as recommended by framing manufacturer.
   a. All mechanical anchoring products (cast-in and/or post-installed) to concrete shall be in accordance with ACI 318 as amended in Section 1905 of the 2021 IBC.

H. Suspended Ceiling System (optional method for interior flat ceiling locations): Shall be USG Drywall Suspension System for Flat Ceilings. Provide UL Fire Rated System where required.

1. System Description: A pre-engineered drywall suspension system consisting of straight main tees along with straight furring cross channels or cross tees, that join together to support screw attached gypsum panels and independently supported light fixtures, and air diffusers, where applicable. Where applicable, installed systems must conform to Underwriters Laboratories, Inc. (UL) Fire Resistance Design No. (as indicated on drawings) and other applicable codes.
   a. Submit performance features for review Not to be used
   b. Not to be used for exterior applications
2. Components fabricated of commercial quality, cold formed steel, hot dipped galvanized finish.
   a. Main Tees and Cross Tees: 1-1/2" high x flange face width as required to support suspended ceiling application, double web tee design. Cross Tees must have quick release ends to provide positive locking and removability without the need for tools; or
   b. Provide all required accessory items, including but not limited to:
      1) Cross Channels
      2) Wall moldings, angle and/or channel design
      3) Transition Clips
      4) Splice Clips
      5) Compasso Clips
      6) Conventional Gypsum Panel fasteners (ASTM C1002). No. 6 Type-S, HiLo bugle head, self-drilling, self-tapping steel screws.

I. Accessories:

1. Accessories shall be all metal, heavy gauge, hot dipped galvanized steel (unless otherwise noted), and shall include corner beads, casing beads, and other trim as required to complete finish system. All accessories shall be of type to provide for joint compound finish.
2. Control Joint No. 093, roll formed zinc with tape protected opening.
3. "J" Bead shall be Plastic Components Inc. # 200X-58 for 5/8” board; an edge trim for capping vertical and horizontal edges of raw gypsum board, protects moisture from weeping into board, will not rust, and prevents electrolysis.
4. Subject to compliance with requirements suggested drywall trims and accessories by USG.

PART 3 EXECUTION

3.01 PREPARATION FOR WORK

A. Examine and inspect materials to which wallboard is to be applied. Remedy all defects prior to

installation of drywall. Any defects in the finished installation due to misaligned framing or other causes will be the responsibility of the work performed under that section of the specifications and such defects shall be remedied under that section of the specifications.

B. Maintain a uniform room temperature between 55°F. and 70°F. in cold weather during application and until completely dry. Provide adequate ventilation.

3.02 NOT USED

3.03 INSTALLATION OF STANDARD METAL SUPPORT SYSTEM

A. Metal support system shall be installed in conformance to ASTM C754.

B. Where metal studs/furring are installed directly against exterior CMU/concrete walls, install asphalt felt strips or glass fiber strips between studs and wall.

C. Erect framing plumb, level and square. Tolerances:
1. Do not exceed 1/8 inch in 8'-0" variation from plumb or level in exposed lines of surfaces.
2. Do not exceed 1/16 inch variation between planes of abutting edges or ends.
3. Shim as required to comply with specified tolerances.
4. Spacing of framing members shall not exceed specified spacing requirements by more than 1/8”.

D. Coordinate with mechanical and electrical trades for all penetration sizes / locations for ductwork, equipment, piping, etc., and frame openings as required.

E. Floor and Ceiling Track: Align to assure plumb partition. Secure track with suitable fasteners at a maximum of 24" o.c. Position studs in track at a maximum of 16" o.c. Secure main studs to track by metal lock fastener tool, or other means as approved by Architect. Secure studs located adjacent to door and window frames, partition intersections and corners, by self-drilling sheet metal screws through both flanges of studs and tracks.
1. Provide slip joint at heads of vertical wall construction at all movement areas, such as vertical walls attached to beams above. Slip joint with track shall include the deflection track to be anchored at head of wall and the plate track to slide up and down within the deflection track. Plate track shall fit within deflection track so that no wall swaying occurs. Provide continuous bridging (stiffening) of vertical studs within one foot of the slip joint with track.

F. Pipe Chase Walls: Pipe chase walls shall be cross braced at each pair of studs with required length of stud material. Two (2) braces, equally spaced shall be screw applied to each pair of studs.

G. Door Frames: Two (2) steel studs placed back to back, shall be installed at each side of steel door frames. Double studs shall extend full height of partition. Door frames shall be securely fastened to studs at all anchors and packed full at head and jambs with batt insulation.
1. All wall openings shall include box beam headers.

H. Install a minimum of 3 studs at partition corners.

I. All partitions, except as otherwise specified, shall extend to underside of beams, floor slab and roof deck.

J. Stiffeners: Partitions shall be horizontally stiffened with cold formed channels through the inside of the studs. Channels/Stiffeners shall be sized as required for friction fit in stud openings in non-load bearing walls. Channels/Stiffeners shall be secured to studs with screws in load bearing walls (welding is not permitted with 20 gauge studs). Channels/Stiffeners shall be spaced as follows:

1. For walls up to and including 10' high, one row of stiffening at mid height.
2. For walls over 10' high, install rows of stiffening a maximum 48" o.c.

K. Sound attenuation batts, specified in Section 072100, shall be installed between studs in locations as noted on the drawings. Batts shall fill complete stud space and extend from floor to full height of studs.

L. Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar work to comply with details indicated or if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer, or if not available, of "Gypsum Construction Handbook" published by United States Gypsum Company. Coordinate locations of required blocking for casework and related items to be installed by various equipment Contractors, trades, and the Owner (for Owner furnished equipment).

M. Furring Channels: Shall be spaced 16" o.c. Furring shall be secured with fasteners 24" o.c., alternated on flanges.

N. Install all access panels as furnished under other sections of the specifications and as required and furnished by other contractors.

O. Suspended Ceilings:

1. Main Runner Channels: Space runner channels not more than 3 feet on centers and shall be located within 6" of the wall to support the ends of the main runners. Support runner channels at 4 foot intervals, and at ends with hangers of No. 8 galvanized wire. Center to center spacing of main runner shall be in accordance with wallboard manufacturer's recommendation for thickness of wallboard specified (generally 16” o.c.). Wire hangers shall be saddle tied to runner channels, and the end given three (3) twists around itself.
2. Cross Furring Channels: Attach furring channels to runner channels at right angles, and secure to each intersection with 16 gauge galvanized annealed or monel wire, saddle tied by at least two (2) turns, or furring channel clips. Space furring channels maximum of 16” on center. Provide framing in suspended ceilings to receive recessed lighting fixtures, and access doors where required. Where furring members are spliced, the ends shall be overlapped not less than eight (8) inches (with flanges of channels interlocked) and securely tied near each end of the splice with two (2) loops of No. 16 gauge galvanized wire.
3. Flat ceilings of gypsum Wallboard shall be applied with drywall screws spaced 12" on center in field of board and along abutting ends. Refer to recommendations of manufacturer regarding other types of boards and/or spacing of fasteners for radiused construction. Maximum spacing of fasteners for flat cement board ceilings shall be 6” o.c.

P. Ceiling Installation – USG Optional Method: Install in accordance with ASTM C636, CISCA installation standards, and other applicable code references, as well as manufacturer’s current printed recommendations. Component and hanger wire installation:

1. Main tees shall be spaced a maximum of 48" on center and supported by hanger wires spaced a maximum 48" on center and as specified by UL Fire Resistance Directory attaching hanger wires directly to structure above.

2. Cross tees shall be spaced per manufacturers' recommendations and as specified by UL Fire Resistance Directory. Cross tees shall also be installed adjacent to all recessed light fixtures on each side not supported by a furring runner.
3. Transitions: Changes in Elevation in Soffit and Fascia Ceiling Applications.
4. When constructing stepped soffits, bracing of the drywall suspension system and/or additional hanger wires may be necessary to ensure stability and structural performance during and after drywall attachment. The maximum vertical soffit height is 48". (Maximum unsupported drywall area shall not exceed 48" x 24"). Intermediate cross tees are not necessary when soffit dimensions do not exceed 24".
5. Cross tee spacing in horizontal soffit plane is not to exceed 24". Intermediate cross tees may be necessary to maintain visually acceptable drywall planes and drywall corners.
6. General hanger wire notes:
    a. Hanger wires are required within 12" on both sides of a pivoted splice clip.
    b. At least 1 hanger wire is required within 12" of a transition clip.
    c. Pay particular attention to the number and placement of hanger wires around light fixtures as marked on the design plans. Hanger wires shall be wrapped tightly at least 3 full turns.
    d. Do not support wires from mechanical and/or electrical equipment occurring above ceiling.
7. Accessories: Install accessories as applicable to meet project requirements.
8. Install trim at all internal and external angles formed by the intersection of panel surfaces or other dissimilar materials.
9. Apply corner bead to all vertical or horizontal external corners in accordance with manufacturer's directions.

3.04 INSTALLATION OF WALL BOARDS

A. Gypsum board application and finishing standards shall comply with ASTM C840 and GA216.

B. The General Contractor shall be responsible to provide completely sealed construction throughout the entire building.

C. Gypsum wallboard shall be cut by scoring and breaking or sawing, working from face side. Where board meets projecting surfaces it shall be scribed neatly. Cut edges shall be smoothed.

D. Balanced System - one layer each side: Apply gypsum panels with long dimension parallel (or at right angles) to studs. Use maximum lengths to minimize end joints. Position panel so all abutting ends and edges will be located in center of stud flanges. Joints shall be neatly fitted and staggered (minimum 24") on opposite sides of the partition. Fasten panels with screws, Type S, spaced a maximum of 12" o.c. in field of panel and 8" o.c. along abutting edges. Stagger screws on abutting edges or ends. For fire rated construction apply in accordance to requirements of the design rating.
1. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels.
2. Do not place tapered edges against cut edges or ends.

E. Balanced System - two (2) layers each side or one side: Apply the base layer vertically with vertical joints staggered on opposite sides of the partition and screw, attach with 1" screws Type S spaced 16" o.c. in the field and vertical joints of the board. Apply the face layer vertically with vertical joints offset 24" from base layer joints and staggered on opposite sides of the partition. Attach with 1-5/8" screws, Type S spaced 16" o.c. in the field and vertical joints of the board.
1. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open

space between panels (both layers).
2. Do not place tapered edges against cut edges or ends (outer layer).

F. Surfaces Receiving Wall Tile: All metal stud partition walls and all masonry walls shall have wallboard applied in accordance with ANSI A108.11 and ASTM C840 prior to the installation of wall tile. Install cement board in all locations.
1. Fill all openings with tile setting mastic or mortar to prevent water penetration. Reinforce all joints with mesh tape embedded in tile adhesive.

G. Cement Board: Installation shall comply with ANSI A108.11 and in accordance with manufacturer's instructions.
1. To cut DUROCK Cement Board, mark desired size on board with a ruler and pencil. Score both sides and edges with a utility knife, cut through the mesh, and snap the board to size. Smooth cut edges with wood rasp. To make cut-outs for fixtures, outline area with a utility knife, cut through the mesh on both sides, and punch out with a hammer from the back side. Smooth cut edges with a wood rasp. Where board meets projecting surfaces it shall be scribed neatly.
2. To cut Dens-Shield, cut by scoring and breaking or sawing, working from face side. Cut edges shall be smoothed. Where board meets projecting surfaces it shall be scribed neatly.
3. Position Dens-Shield with coated (black) face away from framing.
4. Space fasteners 6" o.c. Drive fasteners flush with coated surface.
5. Fill all openings and reinforce all joints as specified above.

H. Casing Beads: Install casing beads where wallboard abuts dissimilar materials and/or as shown on drawings.

I. Control Joints: Install control joint on each side of door headers and window headers to deck above and at other locations as recommended by gypsum board manufacturer and as shown on drawings.
1. Generally, the maximum distance between control joints shall be 50 feet in any direction with perimeter relief, 30 feet in any direction without perimeter relief, wherever ceiling abuts dissimilar partition, ceiling, or structural element, and wherever expansion or control joints occur in the existing support construction.
2. Control joint locations that extend behind bulkheads, above ceilings, etc., shall continue to deck/wall beyond.

J. Lamination to solid substrates: Substrate surfaces shall be cleaned free of excess mortar or other protrusions. Wallboard shall be coated with adhesive and applied to wall in conformance to printed recommendations of adhesive manufacturer. Contractor shall measure and document the moisture content of masonry before applying wallboard. Masonry shall be well cured and dried before application of wallboard.

K. Sound Transmission: All partitions shall extend to underside of floor slab and/or roof deck. Beams and/or trusses/joists at wall locations shall be wrapped with gypsum wallboard. Studs above ceiling shall be covered on each side with one layer of gypsum wallboard. All cutouts shall be adequately sealed.
1. All penetrations/edges/joints/etc. shall be sealed for air tightness.

L. All wallboard shall be installed with a sealant bead (3/8" high) of caulking between floor and the bottom edge of the wallboard to prevent accidental spills or cleaning substances from wicking up into the wall. See 079200 for sealant.

3.05 JOINT AND CORNER FINISHING

A. Gypsum board finishing standards shall comply with ASTM C840 and GA216.

B. Joint and corner finishing materials and application shall be as follows:
1. Joint compound shall be mixed in accordance with printed instructions contained on the package.
2. All V grooves formed by abutting wrapped eased edges of wallboard shall be prefilled with Durabond "90" joint compound.
3. Uniformly thin layer of joint compound shall be applied over the joint approximately 4" wide. The tape shall be centered over the joint and embedded into the compound leaving sufficient joint compound under the tape to provide proper bond. Ceiling angles shall be reinforced with the tape folded to conform to the angles and embedded into the compound.
4. After compound is thoroughly dry (approximately 24 hours under normal drying conditions), the tape shall be covered with a coat of joint compound spread over the tape, approximately 3" on each side of the tape, and feathered out at the edge. After thoroughly dry, another coat of joint compound shall be applied with a slight, uniform crown over the joint. This coat shall be smooth and the edges feathered approximately 3" beyond the preceding coat.
5. All nail or screw heads or dimples shall receive three (3) coats of joint compound. This may be applied as each coat is applied to the joints. Allowing twenty-four (24) hours drying time between coats.
6. All inside corners shall be coated with at least one (1) coat of joint compound with the edges feathered out.
7. Flanges of wallboard corner bead shall be concealed by at least two (2) coats of compound. The first coat shall be joint compound, and out approximately 9" on both sides of the exposed metal nose.
8. Allow each application of compound to joints and fastener heads to dry, then sand if necessary. Caution shall be used to avoid roughing of the wallboard paper. All wallboard shall be smooth and ready for finish as specified.
9. Cutouts for electrical boxes, piping, etc., shall be sealed with compound or other approved material, to control sound transmission as well as appearance.

C. Wallboard to receive ceramic tile shall have joint and corner finishing as follows: Prefill joints with tile-setting mortar or adhesive and then immediately embed tape, centered over the joint, and level joints. As an alternate, apply tape over the joints and then apply tile-setting mortar or adhesive, forcing it through the tape to completely fill and level the joints. This may require several passes to accomplish. Apply ceramic tile according to Section 093000.

3.06 LEVELS OF FINISH

A. Level 1 per GA-214:
1. All joints and interior angles shall have tape embedded in joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
2. This level of finish shall be used where surface is not exposed to view. Where a fire resistance rating is required for the gypsum board assembly, details of construction shall be in accordance with reports of fire tests of assemblies that have met the fire rating requirement.

B. Level 5 per GA-214:
1. All joints and interior angles shall have tape embedded in joint compound and three separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. A thin

skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges. Note: It is recommended that the prepared surface be coated with a primer/sealer prior to the application of finish paint. See painting specification in this regard.

2. This finish shall be applied a minimum of six inches above finish ceiling line. Above that point, tape joints only - apply no finish.
3. This level of finish is to be used for all exposed to view locations.
4. Refer to Paragraph 2.02.C for optional material.

3.07 CLEANING

A. After completion of work, all scaffolding, tools and other equipment shall be removed from the building, taking care not to damage work of other trades. All plaster shall be removed from glass, trim and other trades. All plaster rubbish shall be removed and the building left in a broom clean condition. No plaster dust shall be permitted to be left behind.

END OF SECTION 092116

SECTION 093000 - TILING

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the tile work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Ceramic Mosaic Floor Tile
2. Ceramic Wall Tile
5. Marble Stools

C. Contractor shall include in the preparation of existing substrate an amount of flood coat underlayment (leveling compound) to provide for 1/4" thick underlayment coat in all existing areas scheduled to receive finish flooring material. Contractor shall review the condition of the existing substrate with the Architect prior to the installation of leveling compound/underlayment to determine the necessary coverage area and if more or less thickness is required. Any underlayment required to prepare new concrete floor slabs for finish flooring shall be at the Contractor's expense.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Cast-In-Place Concrete - Section 033000.

C. Joint Sealants - Section 079200.

1.03 STANDARDS

A. All tile shall be manufactured in accordance with American National Standards Institute, ANSI A.137.1, Standard Grade.

B. ANSI Tile Installation Standard: Comply with applicable parts of ANSI 108 and A118 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile".

C. TCNA (Tile Council of North America) Installation Guidelines: TCNA "Handbook for Ceramic, Glass, and Stone Tile Installation"; comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.

D. Marble Institute of America (MIA) Dimension Stone Design Manual.

E. Movement Joints shall comply with the above listed Standards, as well as the following ASTM Standards: ASTM C1193 Standard Guide for the Use of Joint Sealants and ASTM C1472 Standard Guide

for Calculating Movement and Other Effects When Establishing Sealant Joint Width.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Submit actual material samples in full range of colors and patterns of each type of materials required.

D. Submit movement joint layout plan for tile work.

E. Care and Maintenance information of tile work shall be submitted as specified in Section 017700, and all required warranties and guarantees.

1.05 QUALITY ASSURANCE

A. Prior to commencing with the specified work, a Pre-Tile Installation Conference shall be held at the job site so that field conditions are evaluated and methods and procedures for the installation of tile are reviewed and agreed upon. In addition to the Project Architect, the General Contractor, the Tile Installer and a Technical Representative of each tile manufacturer shall attend the Pre-Tile Conference along with the building Owner's Representative. Amount of leveling compound/underlayment required to be installed on existing substrates shall be a part of the discussion (existing finish flooring materials shall be removed prior to this conference).

1. Sample floor / wall locations (see Paragraph 3.02) shall be determined at this meeting; the tile installation of sample floors / walls shall be completed by the Contractor and reviewed and approved by the Architect prior to commencing with any additional tile work on site, unless otherwise approved by the Architect.
    a. Floor sample shall be reviewed for application of liquid applied waterproofing membrane prior to installation of floor tile.

B. Tile installers shall be certified / verified and demonstrate knowledge of industry standards. Acceptable certifications include, but may not be limited to:

1. Certified Ceramic Tile Installers (CTI) through Ceramic Tile Education Foundation (CTEF); or Tile-installer Thin-set Standards (ITS) verification through the University of Ceramic Tile and Stone (UofCTS).
2. Tile installers shall be trained in application of the liquid applied waterproofing membrane, submit verification of training and experience with product.

C. The installation of the liquid applied waterproofing membrane shall be inspected and verified by a technical representative of the liquid applied waterproofing membrane manufacturer and the Owner's Representative prior to installation of subsequent materials.

1. Thickness of application shall also be measured, dry mil thickness shall be minimum 40.

1.06 PRODUCT HANDLING

A. Deliver packaged materials and store them in original containers with seals unbroken and labels intact

until time for use, in accordance with manufacturers instructions. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.

1.07 WARRANTY

A. Installation of the floor tile with specified mortar, grout, and waterproofing / anti-fracture membrane shall be provided with manufacturer's standard Installation Warranty for the three component system, but not less than ten years.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mosaic Floor Tile: Shall be as manufactured by Dal-Tile Corporation, Dallas, TX.
   1. Mosaic tile shall be 2" x 2" unglazed impervious porcelain type cushion edge with less than 1/2% absorption.
   2. Contractors shall include in their bid for furnishing and installing floor tile in field and accent tile in designs to be selected by the Architect. Maximum of two (2) colors of accent tile, comprising approximately 20% of the total quantity of floor tile, in addition to the field tile color. Colors shall be as selected by the Architect from the following:
      a. Field Tile:
         1) Any of Dal-Tile's Color Wheel Collection – Mosaics and/or Keystones Collection Mosaics, Semi-Gloss and/or Matte Tile Price Groups 1 and/or 2 colors.
      b. Accent Tile:
         1) Any of Dal-Tile's Color Wheel Collection – Accent Mosaics and/or Keystones Collection Mosaics, Price Groups 3 and/or 4 colors.
   3. See below for metal edge trim where floor tile adjoins dissimilar flooring.
   4. All joints between wall tile and floor tile shall be caulked.

B. Ceramic Wall Tile: Shall be as manufactured by Dal-Tile Corporation, Dallas, TX.
   1. Wall tile shall be 4-1/4" x 4-1/4" x 5/16". Provide straight base tile (non-cove base).
      a. Note: substrate shall be cementitious tile backer board as specified in Section 092116.
   2. Colors: Contractors shall include in their bid for furnishing and installing wall tile in patterns and number of colors to be selected by the Architect. Maximum of two (2) colors of accent tile, comprising approximately 20% of the total quantity of wall tile, in addition to the field tile color. Colors shall be as selected by the Architect from the following:
      a. Field Tile:
         1) Any of Dal-Tile's Color Wheel Collection – Classic, Semi-Gloss and/or Matte Tile Price Group 1 colors.
      b. Accent Tile:
         1) Any of Dal-Tile's Color Wheel Collection – Classic, Accent Tile Price Group 3 colors.
   3. See below for metal edge trim detailed at corners and top of wainscot locations.

C. Metal Wall Transition Strips at Ceramic Wall Tile Corners and Caps: Provide products as manufactured by Schluter Systems, or equal, and as selected by the Architect. Strips shall be solid brass, aluminum, and/or anodized aluminum as selected by Architect. Install according to manufacturer's recommendations. Products may include, but not be limited to:
   1. Schluter Rondec-DB for exposed tile edge caps (top of wainscot locations, etc.).
   2. Schluter Jolly finishing and edge-protection profile for outside wall corners and edges

3. Profile height as required to accommodate thickness of wall tile to be edged.
4. Provide manufacturer's finished end cap for wainscot locations.
5. Provide angle of trim as required by angle created by intersecting walls (i.e., 90°, 135°, etc.)

D. Metal Floor Edge Strips for locations where floor tile adjoins dissimilar flooring: Provide products as manufactured by Schluter Systems, or equal. Strips shall be solid brass, aluminum, and/or anodized aluminum as selected by Architect; height and type as required to accommodate thickness and type of finish flooring to be edged. Products include but not limited to the following:
1. "Schluter Schiene"
2. "Schluter-RENO-U"
3. Install edging according to manufacturer's recommendations.

E. Marble Window Stools:
1. Marble shall be in color as selected by Architect with a polished finish. Marble shall be Class "A". Minimum hardness shall be HA 16 with absorption of .09% or less; minimum hardness of HA 14, absorption of .16% is also acceptable. Marble as quarried and fabricated by Vermont Marble Company, Proctor, VT; Georgia Marble Company, Nelson, GA; and/or Italian Marble is approved for bidding this Project.
   a. Submit color samples for Architect's selection, including but not limited to full range of grey(s), white(s), and rose(s).
2. Stools shall be 3/4" thick. Stools shall project one (1") inch beyond face of wall. Joints, if required, shall occur at center of mullions. Ends shall be flush with window opening width.

F. Setting Materials – Floor and/or Wall tile thin-set.
1. Mortar: Latex Portland cement mortar per ANSI A118.4. Acceptable products:
   a. S-1000 MP as manufactured by Summitville Tiles, Inc.
   b. Porcelain Tile Professional Thinset Mortar or ProLite Premium Large Format Tile Mortar by Custom Building Products.
   c. Laticrete 253 Gold and/or Multimax Lite by Laticrete International, Inc.
   d. Bostik PM.
   e. Ardex X 77™ Microtec® Fiber Reinforced Thin Set Mortar
2. Water: potable.
3. Grout: Polymer modified tile grout per ANSI A118.7. Color as selected by Architect. Acceptable products:
   a. S-720 Precision Color Chrome Sanded Grout by Summitville Tiles, Inc.
   b. Prism Ultimate Performance Grout by Custom Building Products.
   c. Laticrete PermaColor Grout.
   d. Hydroment® Ceramic Tile Grout™ Sanded by Bostik.
   e. Ardex Flex Sanded™ Grout
4. Note: apply sealer to completed grout installation.

G. Setting Materials - Stools:
1. Portland cement - ASTM C-150. Portland cement shall be white. Non-staining cement shall conform to the requirements of the Standard Specifications for Masonry cement, ASTM C91.
2. Sand - ASTM C-144.
3. Water - Potable.
4. Mortar - 1 part portland cement, 6 parts damp sand by volume.
5. Bond Coat - portland cement paste on a mortar bed that is still plastic, or dry-set mortar or latex-portland cement mortar on a cured bed.

H. Waterproofing and Anti-Fracture Membrane (liquid applied): Product shall comply with ANSI A118.10, and be provided with Installation Warranty for three component system as specified in Paragraph 1.07. Acceptable products/manufacturers include the following:

1. S-9000 Crack Isolation/Waterproof Liquid Membrane by Summitville Tiles, Inc.
2. RedGard Waterproofing and Crack Prevention Membrane by Custom Building Products.
3. Laticrete Hydro-Ban by Laticrete International, Inc.
4. Ultra-Set by Bostik, Middleton, MA, as well as, “GoldPlus” to treat cracks and saw cuts.
5. Ardex 8+9™ Waterproofing and Crack Isolation Compound.

I. Cementitious Underlayments, “Flash-Patching” and/or Crack Filler Products: See Section 096500.

J. Unglazed Floor Tile and Grout Sealer: Penetrating sealer. Acceptable products: TileLab SurfaceGard Penetrating Sealer.

K. Protection: Covering shall be heavy-duty, non-staining, reinforced paper. All seams and edges of coverings shall receive pressure sensitive tape to seal covering. Acceptable products include: Trimaco’s X-Paper, Trimaco’s Aqua Shield Non-FR Surface Protection, and/or Ram Board.

L. Cleaner: Shall be SL-7 Super Cleanup Grout and Tile Cleaner as manufactured by Summitville Laboratories, Inc.; SL-33 Quarry Tile Floor Cleaner as manufactured by Summitville Laboratories, Inc.; and/or StoneTech Cleaners as manufactured by Laticrete International, Inc., or approved equal. Adjust cleaner as required by nature of dirt, stain, mold, mildew, soap scum, etc., to be cleaned from surface of tile.

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Surfaces to receive tile work shall be inspected by the applicator with reference to any discrepancies that would affect the proper application and finished appearance of the tile. Work shall not proceed until all irregularities have been corrected.

B. In all locations where tile shall be applied, all foreign matter including paint, grease, oil, wax, dirt and any other material that will inhibit bonding of tile shall be removed.

C. All substrates (floor and/or wall) shall be ground, leveled, and/or made plumb with self-leveling cementitious underlayment and/or trowelable leveling and patching compounds according to tile-setting material manufacturer's written instructions.

D. Provide substrates for tile floors installed with thin-set mortar that comply with flatness tolerances specified in referenced ANSI A108 Series of tile installation standards. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions. Use product specifically recommended by tile-setting material manufacturer. Remove protrusions, bumps, and ridges by sanding or grinding. Tolerances include but may not be limited:

1. Surface which does not vary more than 1/4” in 10’-0” and/or 1/16” in 1’-0”.

E. Concrete surfaces shall be ground and/or leveled with underlayment as required to provide a proper surface for the installation new flooring materials. The General Contractor - Floor Installer shall apply

underlayment to all floors as required to provide a smooth, level surface for installation of finish floor materials. All spalled and rough surfaces shall be filled and leveled. All cracks shall be filled. Variation of flooring substrate at doorways and similar conditions shall be brought to even plane by feathering sub-floor surface. All surfaces to receive underlayment shall have all foreign matter removed. Surfaces shall be ground with abrasive, if required by underlayment manufacturer. Surfaces shall be primed with floor primer recommended by underlayment manufacturer for various floor surface conditions. Underlayment material shall be as specified in Paragraph 2.01.I above, dependent upon thickness of underlayment required to be installed for condition of floor surface to be leveled. Completed underlayment installation shall be sanded as required to provide a smooth, uniform, level substrate surface for the installation of finish flooring.

1. If as a result of the Pre-Flooring Installation Conference, underlayment over the entire subfloor is determined to not be required in an area, The General Contractor - Floor Installer remains responsible for providing a smooth, level surface for installation of finish floor materials, including any “flash-patching”, crack fillers, etc., that may be required to achieve same, at no additional cost to the Owner. “Flash-patching” shall be at the Contractor’s expense, amounts are not included in the Base Bid with the ¼” thick amount of flood coat cementitious underlayment for over existing substrates.
2. Any underlayment required to prepare new concrete floor slabs for finish flooring shall be at the Contractor’s expense, as well as, any “flash-patching”, crack fillers, etc.

F. All surfaces shall be swept and vacuumed to remove all dust and dirt particles.

G. Note: concrete slabs shall be completely cured and free of hydrostatic conditions and/or moisture problems prior to the onset of tilework. Concrete slabs shall be at least 28 days old.

3.02 SAMPLE FLOORS / WALLS

A. Prior to the commencement of tile work on site, the Contractor shall prepare sample floor and wall tile installations at the job site in locations as determined at the pre-installation conference as specified in Paragraph 1.05 of each type of tile work herein specified. Samples shall include selected grout colors for final approval. Completed sample tile installations shall be reviewed and approved by the Architect prior to commencing with additional tile work on site. The reviewed sample(s) shall serve as a Standard for the project.

3.03 INSTALLATION

A. Apply waterproofing membrane, including bond coat as required, to all floor tile locations according with membrane manufacturer's printed instructions prior to installation of tile. Note: the completed installation of floor tile with specified mortar, grout, and waterproofing / anti-fracture membrane shall be warranted as specified in Paragraph 1.07. For locations to receive ceramic tile base, extend waterproofing membrane up wall behind base. Membrane installation shall comply with ANSI A108.13. Membrane manufacturer's instructions may include, but not limited to:

1. Pre-treat cracks and joints, coves and floor/wall intersections, drains, and penetrations.
2. Treat Movement Joints - Apply a coat* of membrane, approximately 8” wide over the areas, embed 6” wide manufacturer’s fabric, and apply a second coat of membrane.
3. Allow pre-treated areas to dry to the touch. Apply a coat* of membrane over substrate including pre-treated areas and allow to dry to the touch. Install another coat* of membrane over the first coat. Let the top coat dry to the touch. When the top coat has dried to the touch inspect the surface for pinholes, voids, thin spots or other defects. Use additional membrane to seal any defects.

a. *Dry coat thickness shall be minimum 20 mil per coat.

4. Protection - Provide protection for newly installed membrane according to manufacturer's instructions.

B. Extend tile work into recesses and under or behind equipment, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints. Inside corners shall be uniformly cut to provide proper joint size. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars or covers overlap tile.

D. Floor Tile thin-set on waterproof membrane on concrete slabs: Shall be installed by Latex Portland Cement Method in conformance to ANSI A108.5 for tile and ANSI A108.10 for grout, TCA method F122-Latest Edition.

1. Seal grout and unglazed tile with specified sealer 48-72 hours after grout application.

E. Ceramic Wall Tile Thin Set Installation: Shall be applied on cement backer board, by latex-portland cement mortar method in conformance to ANSI A108.5 for tile and ANSI A108.10 for polymer modified cement grout, TCA method W244, Latest Edition.

F. Expansion and Control Joints: Provide openings for joints where shown, or if not shown and detailed, to comply with recommendations in TCNA "Handbook for Ceramic Tile Installation" (i.e., Detail EJ171 in the TCNA Handbook). Sealant work is specified in Section 079200. General recommendations include but are not limited to the following:

1. Interior slabs on grade - 20' to 25' each direction
2. Wherever tilework abuts perimeter walls, dissimilar finishes, columns, penetrations, etc.
3. Wherever tilework bridges changes in substrate and wherever expansion, control, construction, cold, and/or seismic joints are located in the building structure.

G. Joints between wall tile and base tile and/or wall tile and all other finish flooring shall be caulked with sealants as specified in Section 079200, refer to details on drawings.

3.03 STOOLS

A. Stool shall be securely set in place before plastering. Stools shall be set tightly against window section in straight, vertical and horizontal lines.

1. Terminate work neatly at edges and corners.
2. Accurately form intersections and returns. Perform cutting without marring visible surfaces. Carefully grind cut edges of abutting trim, finish or built-in items for straight aligned joints. Inside corners shall be uniformly cut to provide proper joint size.

B. Set all stools according to recommendations of Marble Institute of America. Set stools in full mortar bed.

1. Joints between stools and between stools and dissimilar materials shall be caulked with sealants as specified in Section 079200.

C. Stools shall be protected from damage until completion of building. Clean and point all work and leave

all stools in perfect condition. Scratched or abraded surfaces will not be acceptable.

3.04 CLEANING – NEW TILE

A. Cleaning and protection of newly installed tile work shall be according to manufacturer's recommendations and the International Masonry Institute's Technology Brief Section 8.3 for Cleaning Tile and Terrazzo Floors.

B. Upon completion of placement and grouting, clean all tile surfaces so they are free of foreign matter.

C. Floors shall be sealed and finished as specified above.

D. Leave finished installation free of cracked, chipped, broken, unbonded or otherwise defective tile work.

E. Prohibit foot and wheel traffic from using tiled floor for at least three (3) days after grouting is completed.

3.05 PROTECTION OF COMPLETED AREAS

A. After installation of floor covering is completed, all surfaces shall be completely covered with specified protection material until area is accepted by Owner and Architect. Failure by the Contractor to provide such protection shall result in the Architect withholding monies from that Contractor's Monthly Application for Payment and/or withholding certification of the entire monthly application for payment.

3.06 EXCESS MATERIALS

A. All opened boxes of tile materials shall be turned over to the Owner.

END OF SECTION 093000

SECTION 095100 - ACOUSTICAL CEILINGS & SUSPENSION ASSEMBLIES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the acoustical ceiling and suspension assembly work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Acoustical ceiling panels
2. Lay-in exposed grid system
3. The General Contractor shall, prior to the installation of any ceiling grid, verify that the height and arrangement of all items (including mechanical and electrical) shown to be mounted within the grid will clear other objects located above the ceiling plane. Notify the Architect/Engineer of any obstacles/discrepancies to the work. Do not proceed with installation until conflicts have been resolved.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Related electrical work - Electrical Contract.

C. Related mechanical work - Heating & Ventilating Contract.

1.03 SUBMITTALS

A. Product Data: Manufacturer's product specifications for each acoustical ceiling material required, and for the suspension system, and other data as required to show compliance with these specifications.

B. Furnish manufacturer's written certification that the acoustical units are manufactured in accordance with requirements as stated herein.

C. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall provide specific information concerning materials and installation to meet requirements as specified.
1. Submit reflected ceiling plans for all locations shown on Room Finish Schedule, or herein specified to receive acoustical materials, to coordinate with all other trades.

D. Submit samples of materials for Architect’s review of all materials not herein specified by product name.

E. Warranties shall be submitted with all Care and Maintenance information, as specified Section 017700.

1.04 STANDARDS

A. Workmanship and materials shall meet requirements and recommendations of applicable portions of standards listed.

1. American Society for Testing and Materials, ASTM
2. American National Standards Institute, ANSI
3. Acoustical Materials Association, AMA
4. National Acoustical Contractor's Association, NACA
5. Underwriters' Laboratories, UL

B. All lay-in Acoustical Ceiling Panels shall meet minimum Class A Fire Rating.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.

B. Before installing acoustical units, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical units carefully to avoid chipping edges or damaging units in any way.

1.06 JOB CONDITIONS

A. Space Enclosure: Do not install acoustical units until space is enclosed and weatherproof, and until wet-work in space is completed and nominally dry, and until work above ceilings is completed, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

1.07 REFERENCES

A. All acoustical materials shall conform with the requirements of the following;

1. ASTM A366 "Standard Specification for Steel, Carbon Cold-Rolled Sheet, Commercial Quality"
2. ASTM A641 "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire."
3. ASTM C423 "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method."
4. ASTM C635 "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings."
5. ASTM C636 "Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels."
6. ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials."
7. ASTM E413 "Standard Classification for Determination of Sound Transmission Class."
8. FS SS-S-118B "Sound Controlling (Acoustical) Tiles and Panels.", or ASTM E1264 "Standard Classification for Acoustical Ceiling Products."

1.08 WARRANTY

A. Submit 30 year written Warranties for all lay-in ceiling panels specified with Sag and/or Anti-Mold & Mildew Resistance installed in manufacturer's suspension system. Panels shall be free from sagging, warping, or delamination.

1. All suspension systems shall carry 30 year warranty.

PART 2 PRODUCTS

2.01 ACOUSTICAL CEILING PANELS

A. Materials as hereafter specified are as manufactured by Armstrong. Where noted, ceiling panels include humidity resistant Sag Resistance (HumiGuard+): provides validated sag performance; and/or Anti-Mold & Mildew (BioBlock): includes broad spectrum antimicrobial treatment on face and back to resist the growth of mold/mildew and gram-positive and gram-negative odor/stain-causing bacteria.

1. Materials hereinafter specified are used to indicate quality and performance for bidding purposes only. Materials, meeting or exceeding these specifications, manufactured by USG Interior, Inc.; or Certainteed Corp. a Division of Saint Gobain; are approved for bidding this project subject to Architect review of sample products, data submittals, and compliance with warranty(s) as herein specified.

B. Acoustical Ceiling Panels: Shall be of the following types:

1. Lay-in Type 1: Shall be "Fine Fissured – High NRC" Item No. 1754, medium texture, square edge, composed of wet-formed mineral fiber with factory applied latex paint surface finish. Panels shall have a light reflection of 0.85, NRC 0.75, CAC 35, and include HumiGuard+ and BioBlock features. Panels shall be 24" x 24" x 7/8" nominal dimensions. Weight: 1.08 lbs/sq.ft.

2.02 SUSPENSION SYSTEMS

A. Suspension systems shall be Prelude XL 15/16" Exposed Tee Grid System as manufactured by Armstrong, in accordance with requirements of Heavy-Duty structural classification of ASTM Designation C635.

1. Components shall be fabricated from commercial quality hot dipped galvanized steel complying with ASTM A653. All surfaces shall be chemically cleansed and be protective-conversion-coated. All visible surfaces shall then receive baked polyester white painted finish.
   a. Main beams and cross tees shall be double-web steel construction with exposed bottom flange design. Web height shall be 1-1/2". Each exposed bottom flange shall be continuous with unbroken roll-formed cap the length of the member. Main runner shall be routed center-to-center, continuously along the length of its web to locate intersecting cross tees. Cross tees shall be removable without special tools and shall be reusable.
      1) Provide removable cross tees under HVAC units installed above ceilings.
      2) Exposed bottom flange width of main beams and cross tees shall be 15/16".
   b. Capping shall be prefinished galvanized steel, except capping shall be aluminum for Type 4 Lay-in ceiling Panels.
   c. Wall moldings (angle molding) shall have 7/8" exposed flanges, not less than .019" nominal steel. Provide prefabricated corner covers with hemmed edges, size and finish to match wall molding, as follows:
      1) Inside Corner Cover, mitered.
      2) Outside Corner Cover, formed to 90° angle.

d. Accessories shall be specially designed as an integral part of the grid system and shall be installed as per manufacturer's recommendations.
e. Hanger wire shall be #12 galvanized wire.
. Provide hold-down clips for wind uplift resistance at doorways for all ceiling assemblies.

2. Materials, meeting or exceeding these specifications, manufactured by USG Interiors, Westlake, OH; Certainteed Corp. a Division of Saint Gobain; or Chicago Metallic Company™ LLC , a division of ROCKFON, are approved for bidding this project conforming with the warranty(s) required for acoustical panel and grid systems.

B. Supplementary steel ceiling support framing shall be provided and installed as required to support ceiling systems. Framing shall be of sufficient strength to properly support ceilings and to prevent sagging and deflection of system. Support framing shall be welded or securely fastened to the building structural steel framing.

PART 3 EXECUTION

3.01 REQUIREMENTS

A. Installation shall be by personnel specializing in this type of work and approved by manufacturer of material used.

B. The Contractor shall coordinate work with the Electrical Contractor and Mechanical Contractor to assure that lighting fixture and diffuser supports will meet all safety requirements. Mechanical and Electrical Contractors are required to support their fixtures.

C. The Contractor shall examine all surfaces and conditions affecting the proper installation of his materials and shall not proceed until all unsatisfactory conditions have been corrected.

D. Recommendations of the Acoustical Materials Association in their latest bulletin shall apply. Acoustical materials shall be installed under temperature and humidity conditions closely approximating those which will exist when the building is occupied. Concrete flooring, and plastering shall be completed and allowed to dry before installation of acoustical materials. All windows and exterior doors shall be in place and glazed.

3.02 INSTALLATION

A. Installation shall be in accordance with requirements of ASTM Designation C636.

B. Deflection of suspension system components, hangers, and fastening devices supporting light fixtures, ceiling grilles and acoustical units shall not exceed 1/360 of the span.

C. Allowable tolerance of finished acoustical ceiling system shall be 1/8" in 12 feet.

D. Acoustical panel mechanically suspended exposed grid system. Main runners shall be spaced not more than 4' O.C. by wire spaced not more than 4' O.C. Join cross tees to main runners through prerouted openings in beams, locking webs together by means of die-formed end tabs to form a positive interlock. Main beams and cross tees shall rest on angle moldings at walls. Ceiling shall be level and true and installed to permit border units of the greatest possible size, in accordance with standards specified.

E. Penetrations through ceilings, such as pilasters, columns, electrical raceways, etc., shall be finished with trim moldings as applicable, including but not limited to wall moldings with factory manufactured inside and outside corners.

F. Install hold-down clips for wind uplift resistance at doorways.

3.03 CLEANING

A. After installation of all work, material shall be thoroughly cleaned and left free from all defects. Panels which are damaged or improperly applied shall be removed and replaced with perfect tile and/or panels.

B. Remove all cartons, containers, rubbish, and waste materials from the premises as they accumulate.

3.04 ADDITIONAL MATERIAL FOR OWNER'S USE

A. All opened boxes of acoustical materials shall be turned over to the Owner.

B. Provide one (1) carton of acoustical panels in each type selection for replacement use by the Owner.

END OF SECTION 095100

SECTION 096500 - RESILIENT FLOOR COVERING

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the resilient floor covering work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Vinyl Composition Tile (VCT)
2. Rubber Base
3. Edge Trim
4. Underlayment
5. Concrete Sealer

C. Contractor shall include in the preparation of existing substrate an amount of flood coat cementitious underlayment (leveling compound) to provide for 1/4" thick underlayment coat in all existing areas scheduled to receive finish flooring material. Contractor shall review the condition of the existing substrate with the Architect prior to the installation of leveling compound/underlayment to determine the necessary coverage area and if more or less thickness is required. Any underlayment required to prepare new concrete floor slabs for finish flooring shall be at the Contractor's expense.

D. Contractor shall include in the preparation of substrate an amount of concrete sealer to seal all concrete slab (new and/or existing) floor areas scheduled to receive finish flooring material. Concrete sealer shall be as recommended by finish flooring manufacturer for floor slabs which fail to pass moisture tests.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 STANDARDS

A. Workmanship and materials shall meet requirements and recommendations of applicable portions of Standards listed.
1. American National Standards Institute, ANSI
2. American Society for Testing and Materials, ASTM
3. Resilient Floor Covering Institute, RFCI

B. All finish flooring products shall meet flame spread requirements for commercial buildings as required by building codes of project locality. (Generally Class I for vertical exits; exit access corridors - Class I for assembly use and Class II for educational use; rooms - Class II for assembly use and Class III for educational use. Class I - flame spread 0-25; Class II - flame spread 26-75; Class III flame spread - 76-200.)

C. All finish flooring products shall comply with Americans with Disabilities Act (ADA), "Accessibilities Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1, FED-STD-795, "Uniform Federal Accessibility

Standards."

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.
1. Shop drawings shall indicate a working layout of each area, showing flooring patterns, locations of all cut tile, and edge strips. Layouts shall show the least amount of waste.

C. Submit actual material samples in full range of colors and patterns of each type of flooring required.

D. Submit installer's Certificate of qualification by each material manufacturer of resilient flooring to the Architect.

E. Care and Maintenance information of each resilient flooring material shall be submitted with all required warranties and guarantees as specified in Section 017700.

F. Moisture Tests of Concrete Slabs per Paragraph 3.03.

1.05 QUALITY ASSURANCE

A. Prior to commencing with the specified work, a Pre-Flooring Installation Conference shall be held at the job site so that field conditions are evaluated and methods and procedures for the installation of resilient materials are reviewed and agreed upon. In addition to the Project Architect, the General Contractor, the Flooring Installer and a Technical Representative of each flooring material manufacturer shall attend the Pre-Flooring Conference along with the building Owner's Representative. Amount of leveling compound/underlayment required to be installed on existing substrates shall be a part of the discussion (existing finish flooring materials shall be removed prior to this conference).
1. Maintenance of HVAC systems and dehumidification control shall be part of the discussion.

B. Prior to providing rubber base corners and reducer strips, install samples as hereafter specified for review/approval by the Architect.

C. Inspections:
1. During installation, In-Progress Inspections shall be performed by a Technical Representative of the flooring material manufacturer to ascertain all requirements of the specification are being followed by the flooring subcontractor. Quantity of inspections shall be as deemed necessary by the flooring material manufacturer. Upon receipt, the flooring subcontractor must provide the Architect with a copy of the flooring material manufacturer's In-Progress Inspection Report.

D. Manufacturers Qualifications for Substitution Requests: Firm experience of minimum five (5) years in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

E. Installer / Applicator Qualifications: Perform installation with skilled, experienced and trained workmen supervised by trained personnel who shall have minimum three (3) years successful experience in installations of similar products, size and scope.

1. Submit installers documentation of having attended training by the manufacturer and having the approval of the manufacturer.

1.06 MAINTENANCE

A. Upon completion of the flooring installation, the Architect will establish a date for a demonstration of correct resilient flooring maintenance procedures for each type of resilient flooring material. The Contractor shall have a representative of each resilient flooring manufacturer provide a written maintenance program with equipment and materials recommendations as well as give a demonstration of the recommended maintenance procedures to the Owner's Representatives.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packages, containers or bundles bearing brand name, color, pattern number, and identification of manufacturer or supplier.

B. Store materials inside under cover and in manner to keep them dry, protected from the weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

1.08 GUARANTEE/WARRANTY

A. All Warranties to be included in the “Care and Maintenance” binder submittal as specified in Section 017700.

B. The following warranties/guarantees shall be provided to the Owner:
1. Rubber Base: Limited 2-Year Commercial Warranty against Manufacturing Defects. Preformed corners shall be guaranteed to match color/height of adjacent base.
2. VCT: Manufacturer’s 5-year Commercial Warranty when installed in accordance with manufacturer’s recommendations.

C. The Contractor/Floor Installer shall provide a two (2) year installation warranty for each type of resilient flooring.

PART 2 PRODUCTS

2.01 REQUIREMENTS

A. Resilient materials shall be uniform in thickness and size. Resilient flooring shall be cut accurately with square, true edges. Material that does not meet these requirements will be unacceptable. Material not acceptable shall be removed and replaced when directed by Architect.

B. All edge trim, transition pieces and rubber base must be by the same manufacturer.

C. Adhesive: All adhesives shall be as recommended and manufactured by the manufacturer(s) for each flooring product and shall be formulated for VOC (Volatile Organic Compounds) Compliance - all to have low VOC properties and mold/mildew resistant (antimicrobial) properties.
1. Spray adhesives are not permitted.

2.02 MATERIALS

A. Vinyl-Composition Tile (VCT): Shall be Standard Excelon Imperial Texture Tile as manufactured by Armstrong Flooring, a composition of polyvinyl chloride resin binder, fillers, and pigments with colors and pattern detail dispersed uniformly throughout the thickness of the material. Tile shall be 12" x 12" x 1/8".

1. VCT shall conform to the following specifications:
    a. ASTM D 2047, Standard for Static Coefficient of Friction, Minimum 0.5 SCOF (ADA Compliant)
    b. Fire Test Data
        1) ASTM E648 Critical Radiant Flux - 0.45 watts/cm2 or greater, Class I;
        2) ASTM E662 Smoke - 450 or less.
    c. ASTM F1066 - Class 2 (Through Pattern).
    d. ISO 10595 Type II
    e. Static Load Resistance: minimum 125 psi (per ASTM F970)
2. Contractors shall include in their bid for furnishing and installing floor tile in field and accent tile colors in designs to be selected by the Architect; maximum of two (2) colors of accent tile, comprising approximately 20% of the total quantity of floor tile, in addition to the field tile color. Colors for field and accent floor tiles shall be as selected by the Architect from any of the manufacturer's standard colors for the specified product. (Note: colors of VCT may vary from room to room.)

B. Rubber Base: Shall be Pinnacle as manufactured by Roppe, Fostoria, OH. Product shall be "Type TS" vulcanized SBR rubber, 4" high, 1/8" thick with rounded top and 1/2" coved toe. Finish shall be soft matte. Color shall be as selected by the Architect.

1. Corners: Contractor shall erect sample on site of field mitered corners for Architect's review and approval. Should the Architect not approve the field mitered corners, Contractor shall provide cast/molded inside and outside corners.
2. Additional approved products/manufacturers: BurkeBase by Mannington Commercial.

C. Heavy duty type trim edging strip at all junctures with foreign flooring materials shall be rubber type as manufactured by Burke Moldings & Finishings by Mannington, or Roppe. Color shall be as selected by Architect.

D. "Flash-Patching" and/or Crack Filler Products: Shall be product as approved by finish flooring manufacturer, and may include any of the following:

1. S-180 Latex Underlayment as manufactured by Armstrong.
2. Products by Ardex Inc.:
    a. Ardex Feather Finish Self-Drying, Cement Based Finish Underlayment.
    b. Ardex SD-P Self-Drying, Trowelable Concrete Underlayment.
    c. Concrete Crack & Joint Treatments
    d. Ardex Ardiseal Rapid Plus
    e. Ardex Ardifix
3. Uzin-NC886 as manufactured by Uzin.

E. Cementitious Underlayment (leveling compound): Products as follows are as manufactured by Ardex, Inc., Coraopolis, PA. Products complying with these specifications as manufactured by The Euclid Chemical Company; Schonox, HPS North America; Uzin; BASF Building Systems; Maxxon Corporation, Hamel, MN; and/or Mapei are approved for bidding, subject to Architect's approval of specific products.

1. For areas to be leveled up to maximum of 1 1/4" thick: Ardex V1200 Self-Leveling Underlayment.

Compressive strength: 4500 PSI at 28 days, in conformance to ASTM C109. Flexural strength: 1000 PSI at 28 days, in conformance to ASTM C348. Mix shall be as recommended by the manufacturer. Install at a minimum thickness of 1/8" over the highest point in the floor, which typically results in an average thickness of 1/4" or more over the entire floor. Product can be tapered to as thin an application as the sand in the material will allow, however, If a true featheredge is required, provide Ardex Feather Finish for such transitions.

2. For areas to be leveled from 1 1/4" thick to maximum 5" thick: Ardex K-15 Premium Self-Leveling Underlayment. Compressive strength: 5500 PSI at 28 days, in conformance to ASTM C109. Flexural strength: minimum 1200 PSI at 28 days, in conformance to ASTM C348. Material can be installed from featheredge to 1 1/2" thick, without adding aggregate. Where thickness required exceeds 1 1/2", aggregate (1/8"-1/4" clean, dry, well graded pea gravel) shall be added, maximum thickness not to exceed 5". Mix shall be as recommended by the manufacturer.
3. Manufacturer's representative shall review the installation conditions and advise upon appropriate product and primer for use.
4. Provide primers and/or concrete sealers if/as recommended by underlayment manufacturer over various subfloor surfaces prior to application of underlayment.
   a. Concrete Sealer: Ardex MC™ Rapid One-Coat Moisture Control
5. All materials shall be applied in conformance to underlayment manufacturer's directions.

F. Concrete Waterproofing Sealer: The Base Bid shall include a concrete waterproofing sealer such as Bone Dry Concrete Sealer by BoneDry Products, Inc., Kenosha, WI, or equivalent product (i.e., Vect-R as manufactured by Sinak, San Diego, CA), to seal all concrete slab floor areas scheduled to receive finish flooring material. Actual sealer product shall be verified with the finish flooring manufacturer.

G. Floor Finish for VCT: Provide high-quality commercial floor polish. Polish shall be an acrylic emulsion-type containing 18% - 22% solids, polish shall be coordinated with the Owner and applied according to the Manufacturer's recommendations.

H. Sealants: As specified in Section 079200.
   1. For use at perimeter wall intersections with gypsum wall board construction.
   2. Traffic Bearing Sealant for use at control joints in finish flooring.

I. Protection: Covering shall be heavy-duty, non-staining, reinforced paper. All seams and edges of coverings shall receive pressure sensitive tape to seal covering. Acceptable products include: Trimaco's X-Paper, Trimaco's Aqua Shield Non-FR Surface Protection, and/or Ram Board.

PART 3 EXECUTION

3.01 PROJECT CONDITIONS

A. Maintain minimum temperature of 70º (to maximum 80°F) in permanently enclosed spaces to receive finish flooring for at least 72 hours prior to installation, during installation and for not less than 72 hours after installation.

B. The General Contractor shall be responsible to maintain relative humidity (as required by the material manufacturer) within the space prior to, during, and after installation. Prior to installation, relative humidity shall have been maintained a minimum (1) one week.
   1. The General Contractor shall employ dehumidification equipment as required to install finishes according to herein specifications and as required to meet construction schedule.

C. Store resilient materials in spaces where they will be installed for at least 72 hours before beginning installation.

D. Install resilient materials and accessories after other finishing operations, including painting, have been completed.

E. Do not start work until all materials of other trades have been installed which will penetrate resilient flooring.

3.02 PREPARATION

A. The General Contractor - Floor Installer shall test floors, including where existing materials are removed, to determine if finish flooring materials will adhere to the floor surfaces. Any additional steps required to prepare floor surfaces for proper adherence of finish flooring materials is the responsibility of the General Contractor.

B. Do not install resilient flooring over new concrete slabs until the slabs have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test. Conduct anhydrous calcium chloride tests [aka Moisture Vapor Emission Test (MVER)], in accordance with ASTM F1869, with a maximum allowable 5 pounds of water emission per 24 hours per 1,000 square feet; and Percent Relative Humidity (RH) tests in accordance with ASTM F2170, with maximum acceptable internal RH of 80%, on concrete slabs to determine if floor slabs are properly prepared and sufficiently dry for adherence of flooring materials. In addition to previously specified test, perform any other tests required or recommended by resilient flooring materials manufacturer to determine suitability of floor slabs to receive installation of flooring materials.

1. Submit moisture testing results to Architect. Manufacturer of finish flooring material must submit letter of acceptance for their flooring product and adhesive to be installed on the Project substrate based on the moisture tests of the slab. Frequency of tests shall be as required by finish flooring manufacturer.
2. New concrete must cure for 60 days prior to testing.
3. Floor slabs shall receive concrete waterproofing sealer regardless of results of moisture tests. Apply sealer over prepared floors in accordance with manufacturer’s printed instructions.

C. Concrete surfaces shall be ground and/or leveled with underlayment as required to provide a proper surface for the installation new flooring materials. The General Contractor - Floor Installer shall apply underlayment to all floors as required to provide a smooth, level surface for installation of finish floor materials. All spalled and rough surfaces shall be filled and leveled. All cracks shall be filled. Variation of flooring substrate at doorways and similar conditions shall be brought to even plane by feathering sub-floor surface. All surfaces to receive underlayment shall have all foreign matter removed. Surfaces shall be ground with abrasive, if required by underlayment manufacturer. Surfaces shall be primed with floor primer recommended by underlayment manufacturer for various floor surface conditions. Underlayment material shall be as specified in Paragraph 2.02.F above, thickness of underlayment required to be installed shall be dependent upon condition of floor surface to be leveled. Completed underlayment installation shall be sanded as required to provide a smooth, uniform, level substrate surface for the installation of finish flooring.

1. If as a result of the Pre-Flooring Installation Conference, underlayment over the entire subfloor is determined to not be required in an area, The General Contractor - Floor Installer remains responsible for providing a smooth, level surface for installation of finish floor materials, including

any “flash-patching”, crack fillers, etc., that may be required to achieve same, at no additional cost to the Owner. “Flash-patching” shall be at the Contractor’s expense, amounts are not included in the Base Bid with the ¼” thick amount of flood coat cementitious underlayment for over existing substrates.

2. Any underlayment required to prepare new concrete floor slabs for finish flooring shall be at the Contractor’s expense, as well as, any “flash-patching”, crack fillers, etc.

D. Fill all mortar joints in masonry walls flush with cement based patching compound and/or mortar prior to installation of rubber base. Make top edge smooth and level to present a neat finished appearance.

E. All surfaces shall be swept and vacuumed to remove all dust and dirt particles and be cleaned free of paint, grease, wax, oil, and any material which will inhibit adhesive bond, immediately prior to application of adhesive.

F. All surfaces to receive resilient materials shall be examined/inspected with reference to any discrepancies that would affect the proper application and finished appearance of the resilient flooring. Work shall not proceed until all defects/irregularities have been corrected.

3.03 GENERAL - INSTALLATION

A. Acceptable Finished Floor Surfaces: The Owner and the Architect will expect to receive a resilient floor finish surface that is free of bumps (peaked spots on the substrate), sharp depressions, ridges, gaps at adjoining wall surfaces, other requirements shall be in accordance with Standards specified.

B. The General Contractor shall coordinate with other Prime Contractors for the installation of finish flooring in the lid of floor boxes, cleanouts, etc., installed by other Prime Contractors. The General Contractor shall install the finish flooring to match surrounding finish floor and shall provide a filler, if necessary, so that the finish flooring sets flush with the top of the lid. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers.

C. Expansion / Control Joints: Where recommended by resilient flooring manufacturer, where new concrete slabs meet existing concrete slabs, and where expansion/control joints occur in existing concrete slabs, lay resilient flooring to have joint spanning joint in subfloor. Seal joint with traffic bearing sealant as specified in Section 079200.

D. Caulk the edges of the flooring against gypsum walls with sealant, as specified in Section 079200, before the installation of the rubber base to prevent accidental spills or cleaning substances from wicking up into the wall.

E. Scribe, cut, and fit flooring to butt tightly to vertical surfaces, permanent fixtures and built-in furniture, including pipes, outlets, edgings, thresholds, nosings, and cabinets. Extend flooring into toe spaces, door reveals, closets, and similar openings. Where two colors meet at door opening, jointing shall be under center of door.

F. If any corrections are required in the finished installation of sheet flooring, the entire roll width shall be cut out and new installed; additional splices will not be permitted to correct installation errors, as well as, additional seams will not be permitted to be cut into the rolls.

3.04 INSTALLATION OF VCT AND BASE

A. Install tile and base in accordance with printed specifications of the manufacturer. Install tile and base with joints tight and in true alignment. Tile and base without tight joints, or not in true alignment will be rejected. Cut tile to fit snugly at pipes and other fixed vertical surfaces. Remove spots or smears of adhesive immediately. Bleeding of adhesive on finished materials is considered cause for rejection. Damaged materials shall be removed and replaced.

1. Tiles shall be installed with directional markings as recommended by the manufacturer.
2. Install flooring with adhesives, tools, and procedures in strict accordance with the manufacturer's written instructions. Observe recommended adhesive trowel notching, open times, and working times.

B. Tile shall be laid symmetrically about center lines of rooms. Lay tile wall to wall. Lay out work so that, as far as practicable, there will be no pieces of tile less than five (5) inches wide.

C. Do not apply base until plaster has dried thoroughly. Apply base in as long lengths as practical. Scribe base accurately to trim at doors. Back miter free ends.

D. Proceed to cleaning and polishing of VCT as follows.

3.05 CLEANING AND FINISHING OF VCT FLOORING

A. Spots or smears of adhesive and stains shall be removed immediately.

B. Sweep or vacuum the floor thoroughly.

C. Do not wash the floor for at least four to five days after installation.

D. Scrub the floor with a neutral detergent solution using a single-disc floor machine (capacity 170 to 250 rpm) equipped with a scrub brush or a scrubbing pad (3M blue or equal).

E. Thoroughly rinse and allow to dry.

F. Do not flood with rinse water or with scrubbing solutions.

G. After the floor has been thoroughly scrubbed, rinsed, and dried, apply five (5) coats of high quality, commercial floor polish. Apply polish in strict accordance with polish manufacturer's printed instructions. The use of sealers is optional but may be recommended by the polish manufacturer. Allow at least 30 minutes drying time between applications. Do not allow traffic on the floor for the length of time specified by the polish manufacturer.

3.06 PROTECTION OF COMPLETED AREAS

A. After installation of floor covering is completed, all surfaces shall be completely covered with specified protection material until area is accepted by Owner and Architect. Failure by the Contractor to provide such protection shall result in the Architect withholding monies from that Contractor’s Monthly Application for Payment and/or withholding certification of the entire monthly application for payment.

3.07 ADDITIONAL MATERIAL FOR OWNER'S USE

A. The Owner shall view all rubber base scraps before they are removed from the job site and retain any he chooses for future repairs.

B. Provide two (2) cartons of tile in each color selection for replacement use by the Owner.

C. All opened boxes of resilient materials shall be turned over to the Owner.

END OF SECTION 096500

SECTION 099000 - PAINTING & COATING

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials, and all other means of construction necessary to perform the painting and coating work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 DEFINITIONS

A. The terms "paint" or "painting" are used to indicate transparent or opaque finishes including paint, stains, varnishes, lacquers, primers, fillers, coatings, and other similar finishes to be field applied to existing or new interior and exterior surfaces as hereafter specified or as indicated on the drawings.

1.04 STANDARDS

A. Paints and Coatings shall comply with the following:
   1. Top/Finish Paint Coats - GS-11, Green Seal™ Environmental Standard for Paints and Coatings, Latest Edition
   2. Interior Epoxy Finish coats shall meet ASTM E84 Class A, flame spread 5, smoke developed 0.

B. VOC Content of all products installed in the building interior (defined as inside of the weatherproofing system and applied on-site) shall meet the testing and product requirements of the California Department of Health Services “Standard Practice for the Testing of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers”, including Addenda, as well as Rule 1113- Architectural Coatings by the South Coast Air Quality Management District (SCAQMD).

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified, including schedule of painting indicating what each product is to be used for.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions.

C. Submit manufacturer's standard color chips for all specified materials.

D. Prior to the application of any material the Contractor shall submit Material Safety Data Sheets for all products to be used on the project.

1.06 QUALITY ASSURANCE

A. Qualifications of Painter: All work covered by these specifications shall be performed by a professional paint contractor who has had at least five (5) years of field experience in the painting business.

B. A Pre-Installation Conference for Painting shall be held at the job site prior to commencing with painting work on site. The purpose of this meeting shall include, but not be limited to, a discussion on the first-class quality expectations of the Architect/Owner regarding painting work and the Contractor's intent to provide same. Sample room / wall locations (see Paragraph 3.03) shall be determined at this meeting; the painting of sample rooms / walls shall be completed by the Contractor and reviewed and approved by the Architect prior to commencing with any additional painting work on site, unless otherwise approved by the Architect. In addition to the Project Architect, the General Contractor, and his painting subcontractor shall attend the Pre-Installation Conference along with the building Owner's Representative. A manufacturer's representative of approved coating systems shall also be in attendance to review procedures applicable to the installation of each specified system, including but not limited to the following:

1. Review the space conditions, i.e., humidity, ventilation, heat, and advise as to the suitability of the space to receive specified coatings and recommend the appropriate curing period and conditions that should be maintained within the space during the curing period.
2. Review cleaning/preparation of materials to receive specified coating systems and approve said preparation prior to application of specified coating systems.

C. Inspections:

1. During installation, In-Progress Inspections shall be performed by a manufacturer's representative of approved coating systems to ascertain all requirements of the specification are being followed by the painting subcontractor. Quantity of inspections shall be as deemed necessary by each coating manufacturer. Upon receipt, the painting subcontractor must provide the Architect with a copy of each coating manufacturer's In-Progress Inspection Report.

1.07 REQUIREMENTS

A. All work must be thoroughly dry and seasoned before any paint is applied. No exterior work shall be done when rain is falling, during fog, or until dew or moisture which may be on the surface has completely disappeared. All paint shall be applied only within limits of temperature and relative humidity recommended by paint manufacturer.

B. All adjacent work shall be protected from paint droppings, spatters, etc., using drop cloths. All damaged work caused by lack of or improper protection on the part of the contractor shall be restored at his own expense. All oily rags and waste shall be kept in covered metal containers and removed daily from the building with rubbish, empty cans, etc., to prevent accumulation of material which will endanger the building from spontaneous combustion.

C. Provide all scaffolds, staging, etc., required for proper execution of work.

D. The temperature of the building shall be maintained in a uniform range of a minimum of 60°F. for an adequate period (one week) prior to the application of paint, while the painting is being done and after paint is dry.

E. The heat shall be well distributed in all areas and deflection, or protection screens shall be used to prevent concentration or uneven heat of areas near the heat source.

F. Ventilation shall be provided as required to properly dry the paint during and after its application. Provide adequate ventilation as required for products used.

1.08 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered to the site in manufacturer's sealed containers, with seals unbroken. Each container shall bear the manufacturer's label giving manufacturer's name, type of paint, color of paint and instructions.

B. Store materials inside under cover and in manner to keep them dry, protected from the weather, direct sunlight, surface contamination, and damage from construction traffic and other causes.

C. Provide fire extinguisher in storage area. Do not leave containers open. Remove empty cans and rags with oil or solvent from building each day.

D. Store materials between 50- and 95-degrees F.

PART 2 PRODUCTS

2.01 MANUFACTURERS / MATERIALS

A. Paragraph 3.06 “Schedule of Painting” lists paint products intended for specific applications for this Project. Product names as listed, except as hereafter specified, are as manufactured by Benjamin Moore and Company, Montvale, NJ; Sherwin Williams Company, Cleveland, OH; or The Pittsburgh Paints Company. Listed products are intended to denote performance and quality for bidding purposes.

B. Paint, varnish, stains, coatings, and fillers shall be of the highest grade of their respective kinds as marked by established and reputable manufacturing concerns and shall be suited for the purpose intended, according to the best-established practice.

C. Colors and Finish:
1. Colors shall be as selected by the Architect from manufacturer's full color palette, including custom colors to match Owner’s standards.
2. Finish shall be as specified in hereafter schedule, except wall finish shall be as selected by Architect and Owner upon review of sample wall areas, as specified in Paragraph 3.03, of semi-gloss paint finish coat and eggshell paint finish coat for review by Architect and Owner.

D. All products shall be formulated for VOC (Volatile Organic Compounds) Compliance with the latest regulations.

PART 3 EXECUTION

3.01 ENVIRONMENTAL REQUIREMENTS

A. Weather Conditions for all exterior work: Proceed with cleaning and painting work only when existing and forecasted weather conditions comply with manufacturer's recommendations and will permit materials to be applied and cured in accordance with those recommendations. Do not exceed temperature limitations recommended by manufacturer, approximately minimum 50°F, maximum 120°F. Surfaces should be dry

and at least 5°F above the dew point.

3.02 PREPARATORY WORK

A. Prior to beginning work of this Section, a pre-installation meeting shall be held at the job site as specified in Paragraph 1.06.B.

B. The presence of lead-based paint may exist at the site. It is the contractor's responsibility to perform his work in accordance with OSHA Regulations CFR L926.62, also refer to Section 024200.

C. Surfaces to receive paint shall be inspected with reference to any discrepancies that would affect the proper application and finished appearance of the paint. Work shall not proceed until all irregularities have been corrected.

D. Before painting, remove hardware, accessories, plates, etc., and provide ample protection for such items. Upon completion of each space, replace above items. Use only skilled mechanics for removing and connecting above items.

E. Cracks, holes, and other blemishes:
1. All cracks, crevices and nail holes shall be puttied.
2. All surface cracks at corners of joining materials such as casing beads or other dissimilar materials shall be sealed by spackling before painting.
3. Cracks, holes, and blemished areas are to be filled and sanded flush with joining surfaces, then spot primed.

F. General Surface Cleaning:
1. Mildewed Surfaces: Wash with solution of 1-quart liquid household bleach and 3 quarts warm water, scrub surface, allow solution to remain on surface for 10 minutes, rinse with clean water and allow to dry for 48 hours.
2. Dirty Surfaces: Shall be thoroughly washed with a detergent solution. All surfaces to be painted shall be cleaned free of loose dirt and dust before painting is started.
3. All surfaces must be clean and free of wax, oily and greasy residue, and water-soluble materials. Cleaning solvent and rags should be changed frequently.
4. Surfaces that exhibit moderate to heavy chalk deposits must be cleaned thoroughly to a sound substrate by wirebrushing, sanding or by power wash. These surfaces must be primed.
5. Surface cleaning and preparation shall include the removal of rust, whether the surface is metal, wall board, and/or masonry. Surfaces shall not be prime and finish painted until rust has been removed.
6. All debris from surface cleaning shall be completely vacuumed, washed, removed, etc., prior to application of any painting.
7. All surfaces shall be thoroughly dry, prior to application of any painting.

G. Masonry Surfaces: Remove all loose mortar and foreign material. Surface shall be free of laitance, Concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Masonry and mortar must be cured at least 30 days at 75 degrees Fahrenheit. All voids shall be filled with cement patching compound. Efflorescence shall be removed by wirebrushing. Bare brick may require a coat of Loxon or masonry conditioner prior to painting as recommended by paint manufacturer.
1. Masonry surfaces shall be cured and dry to achieve bond with paints/coatings as determined by paint/coating manufacturer, which may require measuring the moisture content of walls, such as

conducting ASTM D4263-83(2012) “Plastic Sheet Test” on concrete and/or masonry walls. Conduct said plastic sheet test on representative samples of walls at concrete masonry units (CMU) not filled with grout, CMU filled with grout, mortar joints, and bond beams. Recommended frequency of tests: 1 per 500 sq.ft. and minimum of 1 per 10 feet of vertical rise, starting within 1 foot of floor.

H. Wood Surfaces: All knots, pitch streaks and sappy spots shall first be touched up with shellac where the finish calls for paint or enamel. All necessary puttying of nail holes, cracks, etc., shall be done after the first coat with putty of a color to match that of the finish. Putty shall be brought flush with the adjoining surface in a neat and workmanlike manner.

I. Metal Surfaces:
1. All loose, blistered, peeling and scaling paint, rust, mill scale, etc., on metal surfaces shall be removed by SSPC-SP1 Solvent Cleaning, SSPC-SP2 Hand Tool Cleaning, and/or SSPC-SP3 Power Tool Cleaning, unless otherwise specified herein. Scarred, blistered, and chipped spots shall be ground smooth. All areas of cleaning shall have edges feathered flush with adjacent surfaces. Where bare material is exposed, spot prime before applying an overall coat of primer.
2. Runs, drips, and sags on shop primed metal work to be left exposed and receive finish painting will not be acceptable; imperfections shall be ground smooth prior to finish painting.
3. All metal surfaces shall first be washed with paint thinner to remove any dirt or grease before applying finish materials.
4. Shop coats of paint that have become marred shall be cleaned and touched up.
5. All galvanized metal surfaces shall be Solvent Cleaned per SSPC-SP1. Galvanized surfaces disturbed by welding or abrasion shall receive a coating of ZINGA, Zinc Film Galvanizing System as manufactured by ZINGA-USA, Cheektowaga, NY.
6. For surfaces of thin metals, any holes exposed in the metal surface, after cleaning as herein specified, shall be patched with automotive body putty and the surface sanded flush with joining surfaces, then spot primed.

J. All factory-finished surfaces to be painted are to be abraded with wet or dry production paper. Remove residue with water-moistened rags.

K. Glossy surfaces shall be dulled by sanding.

L. Plaster/Drywall Surfaces:
1. All damaged drywall shall be cut out and restored as specified in Section 092116 to provide a flush sound surface to receive painting.
    a. Joint compound must be allowed to dry per manufacturers recommendations prior to painting.

M. Preparation of existing painted surfaces:
1. Cleaning and preparation of existing painted surfaces shall be as previously specified.
2. All surface contamination, such as oil, grease, mill scale dirt, foreign matter, rust, mold mildew, mortar, efflorescence, and/or sealers, must be removed to assure sound bonding of new paint.
3. All loose, blistered, peeling and scaling paint on existing surfaces shall be removed by hand scraping, sanding, wirebrushing, or by power equipment where appropriate. Scarred or chipped spots shall be vigorously sanded. All areas of sanding and scraping shall have edges feathered flush with adjacent surfaces.
4. Glossy surfaces of old paint films must be cleaned and dulled by abrasive cleanser or washing

and sanding.
5. Spot prime bare spots with appropriate primer.
6. Apply test patch of specified painting system, covering at least 2 to 3 square feet, allow to dry one week, then test adhesion per ASTM D3359. Also see Paragraph 3.05.

N. Preparation of factory prime painted surfaces:
1. Cleaning and preparation of factory prime painted surfaces shall be as previously specified.

3.03 ACCENTS AND SAMPLE WALLS

A. Before any finish painting work is done, the Contractor shall prepare samples at the job as required until the colors and textures are satisfactory.

B. There will be a minimum of one wall per room and/or corridor painted with an accent or contrasting color from the other walls except for storage rooms, mechanical rooms, and other similar unoccupied spaces. Colors selected for primary walls as well as accent walls may vary from room to room.
1. At the Architect's option, painted accent stripes and/or graphics may be substituted for an "accent wall" in each room and/or corridor. Wall graphics and accent stripes shall be painted in colors as selected by the Architect. The height of wall graphics and accent painting on concrete block walls shall terminate on the block and not extend into the mortar joint.
2. The Architect may also select additional accent colors at bulkheads.

C. Samples: Prior to application of the painting system on any scheduled areas, a wall area shall be selected by the Architect for a sample application of each type of paint or coating for review by the Architect and Owner, the reviewed sample wall(s) shall serve as a Standard for the project. Sample wall areas painted over existing painted surfaces shall also be evaluated for adhesion and durability by the Architect and Owner (as herein specified).
1. Two sample wall areas shall first be completed, one with semi-gloss paint finish coat and one with eggshell paint finish coat for review by Architect and Owner. Wall finish coating systems shall be Semi-gloss or Eggshell as selected by Architect and Owner upon review of sample wall areas.
2. Two sample areas of metal trim (i.e., hollow metal doors and frames) shall first be completed, one with semi-gloss paint finish coat and one with gloss paint finish coat for review by Architect and Owner. Metal trim finish coating systems shall be Semi-gloss or Gloss as selected by Architect and Owner upon review of sample areas.

D. Sample Overhead Surface Area: Prior to application of the painting system on scheduled overhead areas, a sample application of the specified painting system shall be applied to a minimum 25 square foot area and evaluated for adhesion and durability by the Architect and Owner. If any delamination occurs, existing painted surface shall be removed prior to application of specified finish paint system.

E. Painting Systems as specified in Paragraph 3.06 are generally for new surfaces. If paint is to be applied over existing surfaces, a test patch shall be made to determine compatibility of paint over existing surfaces. Apply sealer, if required, as recommended by paint manufacturer in addition to paint specified above.
1. Test patches shall be checked for adhesion per ASTM D3359, as specified in paragraph 3.05.

3.04 WORKMANSHIP

A. All materials shall be applied in strict accordance with manufacturer's directions as printed on container and any thinning required shall be done in the manner prescribed, and exclusively with the type of reducer recommended by the manufacturer.

B. All material shall be evenly spread and smoothly flowed on without runs or sags. All coats shall be thoroughly dry before applying succeeding coats. All interior work shall be sanded between coats with fine sandpaper to produce an even smooth finish, unless otherwise specified.

C. All work where a coat of material has been applied must be reviewed by the Architect and/or Owner before the application of the succeeding specified coat; otherwise, no credit for the coat applied will be given and the Contractor automatically assumes the responsibility to recoat the work in question. The Contractor shall furnish the Architect a report of the coat applied when completed for review, to comply with the above.

D. Final coat on interior work shall not be applied until other trades and contractors are finished with their work, and their materials and debris removed, and the premises left in a substantially broom clean condition.

E. Number of coats specified is minimal. Should work appear unfinished, mottled, or in any way contain visible defects as determined by the Architect, additional sanding and paint coats shall be applied until finished work is satisfactory at no additional cost to the Owner.

F. All paint on interior metal surfaces shall be spray applied.

3.05 PAINTING EXISTING SURFACES

A. Existing surfaces, except as otherwise specified, shall receive the same type of finish as specified for new surfaces.

1. Existing painted surfaces shall receive prime and finish coats as specified.
2. Existing unpainted surfaces shall receive prime and finish coats as specified.
3. Prior to painting, existing painted surfaces shall be inspected for surface tolerance and adhesion testing shall be performed on the surface.
    a. Surface Evaluation: Conduct a cross-hatch test in multiple areas to assess the adhesion and integrity of the existing coating.
    b. Test Samples: Apply specified paint finish to sample test areas, as specified in Paragraph 3.03, to determine compatibility of paint over existing surfaces. Evaluate samples for adhesion and durability and perform adhesion tests per ASTM D3359.
    c. Apply sealer, if required, as recommended by paint manufacturer in addition to paint specified.

3.06 SCHEDULE OF PAINTING

A. General:

1. Prime coat shall be tinted to approximate color of finish coat where products permit.
2. Note that epoxy coatings require extended curing times, submit manufacturer’s recommendations for curing period.
3. Surfaces shall be prepared according to Paragraph 3.02.

4. Provide sample area and adhesion test according to Paragraph 3.03 prior to further painting.

B. Exterior Metal Work:
   1. Above surfaces shall receive the following:
      a. One (1) prime coat of Benjamin Moore Super Spec P06 Alkyd Metal Primer and two (2) finish coats Benjamin Moore Super Spec CP22 Urethane Alkyd Gloss Enamel, or
      b. One (1) prime coat of Sherwin-Williams Pro Industrial ProCryl Universal Metal Primer B66-1300 and two (2) finish coats of Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane Alkyd Gloss, B53-1050 Series, or
      c. One (1) prime coat of PPG Paints Speedhide Interior/Exterior Rust Inhibitive Steel Primer # 6-212 (white) or 6-208 (red oxide) and two (2) finish coats of PPG Paints Speedhide Interior/Exterior Gloss-Oil Enamel #7-282 Series.
   2. Prime coat on galvanized surfaces, not shop primed, shall consist of:
      a. Benjamin Moore Super Spec P04 Acrylic Metal Primer, or
      b. Sherwin-Williams Pro Industrial ProCryl Universal Metal Primer B66-310, or
      c. PPG Paints Speedhide Interior/Exterior Galvanized Steel Primer #6-209 or PPG Paints Pitt-Tech DTM Acrylic Primer #90-712 Series.
   3. Prime coat on mill finish aluminum items shall consist of:
      a. Benjamin Moore Super Spec P04 Acrylic Metal Primer, or
      b. Sherwin-Williams Pro Industrial ProCryl Universal Metal Primer B66-310, or
      c. PPG Paints Pitt-Tech Int/Ext Industrial DTM Primer/Finish Enamel 90-712 Series.
   4. Items of metal work to receive the above finish shall include but not necessarily limited to the following:
      a. Ferrous metal door frames and doors
      b. Lintels
      c. Sign posts and bollard bases

C. Interior Metal Work (epoxy paint):
   1. Above surfaces shall receive the following, Gloss or Semi-gloss finish as selected by Architect following sample review (Paragraph 3.03):
      a. One (1) prime coat of Benjamin Moore Super Spec HP Alkyd Metal Primer P06 and two (2) finish coats of Benjamin Moore Corotech Pre-Catalyzed Waterborne Epoxy V341, or
      b. One (1) prime coat of Sherwin-Williams Pro Industrial ProCryl Universal Metal Primer B66-300 and two (2) finish coats of Sherwin-Williams Pro Industrial Pre-Catalyzed Water Based Epoxy Semi-Gloss, K46 Series, or
      c. One (1) prime coat of PPG Paints Pitt-Tech 90-712 Acrylic DTM Primer/Finish 3.0 mils dry film and two (2) finish coats of PPG Paints Pitt-Glaze WB-1 Interior Semi-Gloss Pre-Catalyzed Water-Borne Acrylic Epoxy 16-510 or two component PPG Paints Aquapon WB EP (98E-1 Series)
   2. Items of metal work to receive the above finish shall include but not necessarily limited to the following:
      a. Ferrous metal door frames and doors
      b. Lintels
      c. Access panels
      d. Cabinet heaters, convectors, etc.
      e. Louver and grilles
      f. Ductwork - bare and insulated (insulated ductwork shall receive similar paint as specified herein for exposed metal) (except ductwork hung from exposed overhead deck/framing to be painted shall be painted with deck as hereafter specified)

g. Electrical blank cover plates
h. Exposed sprinkler, plumbing and heating pipes - bare and insulated
i. Electric panel covers
j. Exposed conduit
k. Surface electrical raceway
l. Wall mounted mechanical and electrical equipment

D. Interior Exposed Overhead Work indicated to be painted:
1. Above surfaces shall receive two (2) finish coats of the following, in addition to any shop coats:
a. Benjamin Moore Latex Dry Fall Flat 395, or
b. Sherwin-Williams Low VOC Waterborne Acrylic Dryfall Flat White B42W81, or
c. PPG Paints Speedhide Super-Tech Latex Dry Fog Flat 6-725XI, Flat White.
2. Prime coat unpainted surfaces, shall consist of one coat of the following:
a. Benjamin Moore Super Spec Alkyd Metal Primer P06, or
b. Sherwin-Williams Pro Industrial ProCryl Universal Metal Primer B66-310 for ferrous metal. Galvanized metal and/or aluminum require no primer, unless rusted; or
c. PPG Paints Speedhide Int/Ext Rust Inhibitive Primer #6-208 or #7-852, or galvanized metal primer - PPG Paints Pitt-Tech Int/Ext Primer/Finish DTM Industrial Enamel 90-712.
3. Items of work to receive the above finish shall include, but not necessarily be limited to, the following:
a. Steel trusses, Zee purlins, etc.
b. Ductwork - bare and insulated
c. Ceiling hung HVAC units
d. Plumbing, sprinkler, and heating pipes - bare and insulated
e. Conduit
f. Plywood deck
g. Concrete deck

E. Exterior Wood Surfaces (Paint):
1. Above surfaces indicated to be painted shall receive the following:
a. One (1) prime coat of Benjamin Moore Fresh Start Moorwhite Exterior Wood Primer #100 and two (2) finish coats of Benjamin Moore Super Spec Urethane Alkyd Gloss Enamel P22, or
b. One (1) prime coat of Sherwin-Williams Exterior Oil Based Wood Primer Y24W8020 and two (2) finish coats of Sherwin-Williams Pro Industrial Acrylic Gloss Coating, B66-600 Series, or
c. One (1) prime coat of PPG Paints Seal Grip Universal Alkyd Primer 17-941NF and two (2) finish coats of PPG Paints Manor Hall Interior/Exterior Acrylic Latex Gloss Enamel 52-110 Series.
2. Items of woodwork to receive the above finish shall include but not necessarily limited to the following:
a. Wood trim

F. Interior Wood Surfaces (epoxy paint):
1. Above surfaces indicated to be painted shall receive the following:
a. One (1) prime coat of Sherwin-Williams Premium Wall & Wood Primer and two (2) finish coats of Sherwin-Williams Sherwin-Williams Pro Industrial Pre-Catalyzed Water Based Epoxy Semi-Gloss Series.

G. Interior Plastered and/or Gypsum Wallboard Surfaces (epoxy paint):
   1. Above surfaces shall receive the following, Semi-gloss or Eg-Shel finish as selected by Architect following sample review (Paragraph 3.03):
      a. One (1) prime coat of Benjamin Moore Fresh Start Multi-Purpose Oil-Based Primer 0024 and two (2) finish coats of Benjamin Moore Corotech Pre-Catalyzed Waterborne Epoxy V341 semi-gloss or V342 Eggshel, or
      b. One (1) prime coat of Sherwin-Williams Loxon Concrete & Masonry Primer/Sealer LX02W50 Series for plastered surfaces, ProMar 200 Zero VOC Interior Latex Primer B28W2600 for gypsum wallboard surfaces, and two (2) finish coats of Sherwin-Williams Pro Industrial Pre-Catalyzed Water Based Epoxy Semi-Gloss, K46 Series, or
      c. One (1) prime coat of PPG Paints Speedhide Quick Dry White Latex Sealer 6-2 and two (2) finish coats of PPG Paints Pitt-Glaze WB-1 Interior Semi-Gloss Pre-Catalyzed Water-Borne Acrylic Epoxy 16-510 or two component PPG Paints Aquapon WB EP (98E-1 Series).

H. Interior Concrete Block Surfaces (epoxy paint):
   1. Above surfaces shall receive the following, Semi-gloss or Eg-Shel finish as selected by Architect following sample review (Paragraph 3.03):
      a. One (1) prime coat of Benjamin Moore Moorcraft Block Filler #285-01 and two (2) finish coats of Benjamin Moore M43/M44 Acrylic Epoxy Gloss Coating, or [2 component product]
      b. One (1) prime coat of Sherwin-Williams PrepRite Block Filler B25W25 and two (2) finish coats of Sherwin-Williams Pro Industrial Pre-Catalyzed Water Based Epoxy Semi-Gloss, K46 Series, or [single component]
      c. One (1) prime coat of PPG Paints Pitt-Glaze High Performance Block Filler 16-90 or Speedhide Int./Ext. Acrylic Masonry Block Filler 6-15XI and two (2) finish coats of PPG Paints Pitt-Glaze WB-1 Interior Semi-Gloss Pre-Catalyzed Water-Borne Acrylic Epoxy 16-510 or two component PPG Paints Aquapon WB EP (98E-1 Series).

I. Interior Plastic/Acrylic Surfaces/Products (including, but are not limited to, plastic electrical raceway covers, etc.): Shall receive prime and finish paint coats as follows:
   1. As manufactured by Sherwin Williams: One (1) prime coat of Extreme Bond Primer B51W150; and two (2) finish coats of Sherwin Williams Pro Industrial Acrylic Coating Semi-Gloss, B66-650 Series.
   2. As manufactured by PPG Paints: One (1) prime coat of PPG Paints Seal Grip Interior Interior/Exterior Acrylic Universal primer/Sealer 17-921; and two (2) finish coats of PPG Paints Pitt-Tech Interior/Exterior Satin DTM Industrial Enamels 90-474 Series.
   3. As Manufactured by Benjamin Moore: One (1) prime coat of Insl-x Stix Waterborne Bonding Primer SXA-110 Primer and two (2) finish coats of Ultra Spec HP Acrylic Semi-gloss enamel HP 29 or low-lustre enamel HP 25.

J. Exterior PVC Downspout Shoes/Boots (Piping and Fittings) and/or Simulated Wood Trim:
   1. Above surfaces shall receive the following, after scuffing/sanding surface for maximum adhesion:
      a. Two (2) finish coats Benjamin Moore Ultra Spec Exterior Satin Finish N448, or
      b. Two (2) finish coats Sherwin Williams A-100 Exterior Acrylic Latex Paint (Satin A82 Series), self-priming on vinyl and/or aluminum siding, or
      c. Two (2) finish coats PPG Paints Speedhide Acrylic Satin 6-2045XI Series.

K. Miscellaneous Items to be Painted:
   1. Paint the inside of all vent and heat ducts, directly back of the grilles where exposed to view with one (1) coat of flat black paint.

2. Touch-up Structural Steel: After field erection, all rivets, bolts, welds, burned edges and abraded surfaces on structural steel, steel joist and steel deck shall be repainted with the same type of paint used for shop coat. All tar pitch or other objectionable material shall be removed before touch-up paint is applied. No bare spots of steel will be accepted.

3.07 CLEANING AND COMPLETION WORK

A. Just prior to final acceptance and completion, the contractor shall examine all painted and finished surfaces and retouch or refinish as necessary and required to leave all surfaces in perfect condition.

B. Install rubber door bumpers in hollow metal door frames of doors without perimeter gasketing after completion of final painting. Bumpers specified in Section 087100.

END OF SECTION 099000

SECTION 100000 - MISCELLANEOUS SPECIALTIES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the miscellaneous specialty work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
   1. Corner Guards

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall show gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, all as applicable for specified materials.

1.04 WARRANTY

A. Provide manufacturer’s warranty(s) as follows:
   1. Corner Guards – 5 years

PART 2 PRODUCTS

2.01 ITEM SPECIFICATIONS

A. General: Items as hereinafter described or as necessary to fulfill job requirements shall be furnished and installed with all accessories to complete the work.

B. Corner Guards: Shall be surface mounted guards consisting of continuous aluminum retainer and snap-on cover of extruded engineered PETG material with textured surface. Product as herein specified is Model SSM-20AN as manufactured by C/S Group (Construction Specialties Inc.). Product Features:
   1. High-impact Acrovyn 4000 with Shadowgrain texture, nominal .078" thick. Colors as selected by Architect from manufacturer’s standard colors and patterns.
   2. 90°guard with 2" legs and 1/4" radiused cover.

3. Chemical and stain resistance per ASTM D543 standards.
4. Aluminum Retainer: Extruded from 6063-T6 alloy, nominal .062".
5. Minimum strength and durability properties per ASTM B221.
6. UL Class A fire rated / labeled
7. Fasteners: Non-corrosive, compatible with aluminum retainers, all supplied by manufacturer. Attachment hardware shall be appropriate for wall construction.
8. Provide color matched end caps for both partial and full height applications. (all corner guards shall be full height unless detailed otherwise).
    a. Corner Guards shall be provided at all outside corners of new ceramic tile wall finish, in addition to locations as noted on drawings.
    a. Corner Guards shall be provided at all outside corners of new gypsum board wall finish (52" high), in addition to locations as noted on drawings.
9. 5 year product warranty
10. Corner guards complying with these specifications manufactured by InPro Corporation's IPC Door and Wall Protection Systems; Balco, Inc.; and/or from the Pro-Tek Wall Protection Systems Line as manufactured by Pawling Corporation, are approved for bidding this project.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install items in locations shown and as detailed on drawings or as recommended by manufacturers.

B. Install items plumb, level, straight, true and in proper alignment with adjacent work.

END OF SECTION 100000

SECTION 101400 - SIGNAGE

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the signage work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
   1. Interior Signage:
      a. Acrylic wall plates
   2. Exterior Signage:
      a. Aluminum wall plates
      b. Handicap Parking Signs (Post Mounted)

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Metal Fabrications - Section 055000.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall indicate:
   1. List sign styles, lettering and locations, and overall dimensions of each sign for wall mounted signage.
      a. All wall mounting details.
   2. Elevations of each post mounted sign, details of construction of each type, including materials (thickness, size, shape, etc.), joints and connections.
      a. All post footing details.

C. Samples:
   1. Submit three samples illustrating full size sample sign, of type, style and color specified including method of attachment for wall mounted signage.
   2. Submit color samples for all signage.
   3. Submit actual signage samples of all “Post Mounted” signage, if requested by Architect.

1.04 STANDARDS

A. Wall plate signage shall meet the requirements of the Accessibility Standards per Chapter 11 of the 2021 International Building Code and ICC A117.1 Usable Buildings and Facilities.

PART 2 PRODUCTS

2.01 INTERIOR WALL PLATE SIGNAGE

A. All acrylic wall plate (nameplate) signage, Keynote 10/G, to be mounted within the interior of the building shall be of the following construction style ("blast" background) having the following characteristics:

1. Material (for Face Plates and Back Plates): Minimum 1/8" thick hard phenolic ES/MP (melamine) plastic laminate with contrasting core color, non-static, fire retardant and self-extinguishing that meets U.S. Government specification No. LP-387A, Type NDP. Colors to be selected by Architect from manufacturer's standard colors.
2. Visual characters for wall plate signage shall comply with ICC A117.1.
3. Text/Symbols/Braille:
    a. Tactile characters/symbols shall be raised the required 1/32 inches from sign plate face. Tactile characters, Grade 2 Braille, [and border] shall be raised from background by sandblast method.
    b. All letters, numbers and/or symbols shall contrast with their background - either light characters on a dark background or dark characters on a light background. Characters and background shall have matte finish.
    c. Signs shall be shape/size as indicated on drawings and/or as required to meet above referenced ADA/ICC Standards.
    d. Letters/numbers shall be minimum 1" high, uppercase, font style as selected by Architect. Letters, numbers, characters, and/or symbols shall be centered on sign. Text for signage shall be furnished by Architect at a later date.
4. Mounting Hardware:
    a. Back plate shall be mechanically fastened to walls with concealed fasteners; adhere to glass surfaces with vinyl foam tape and silastic adhesive and provide blank sign back plate on the opposite side of the glass. At the Contractor's option, backplate may be oversized to provide an exposed 1/4" wide border on all sides of the sign.
        1) Mechanical fasteners shall be vandal proof (tamper resistant).
    b. Face plates may be adhered to back plates with vinyl foam tape and silastic adhesive.
5. Products conforming to these specifications manufactured by the following are approved for bidding:
    a. Best Sign Systems, Inc.;
    b. Bayuk Graphic Systems, Inc., Parkesburg, PA
    c. Diskey Architectural Signage, Fort Wayne, IN;
    d. Graphics 22 Signs, Inc., Pittsburgh, PA;
    e. Precision Sign & Awning, Carnegie, PA;
    f. Sand Carved 200A "Format B" signs by Mohawk Sign Systems, Schenectady, NY.
6. At the Contractor's option, the following signage fabrication may also be provided: UV/LED-cured, 1/32" thick, direct-printed raised characters and fully domed, Grade II Braille dots, printed on painted acrylic. Applied letters and Braille are not permitted. Acceptable products/manufacturers include the following:
    a. EliteSign by Graphics 22 Signs, Inc.

2.02 EXTERIOR WALL PLATE SIGNAGE

A. Exterior Wall Plate Signage (where Keynote 10/G is indicated): Shall be fabricated from aluminum alloy #5052, minimum 1/8" thick. Letter style shall be as selected by Architect. Edge style shall be single or double line, inset single or double line, and/or no border as selected by Architect. Provide integral ADA raised letters, symbols, and braille as detailed on drawings. Signs shall be one-piece construction.

Background texture shall be smooth or sand with baked enamel finish, color as selected by Architect. Mounting method shall be “Blind” with welded bosses to back of sign and threaded rods anchored to wall construction, except signs to be mounted to glass. Signs shall be in size(s) as indicated on drawings or as required to comply with ICC A117.1. Fabricated plates shall be clear coated and oven baked with two part hardened acrylic polyurethane.

1. Exterior Wall Plate Signage (ADA/Wayfinding Plaques), conforming to above specifications, manufactured by A.R.K. Ramos, Oklahoma City, OK; Metallic Arts, Spokane Valley, WA; Precision Sign & Awning, Carnegie, PA; Gemini Incorporated, Cannon Falls, MN; and Graphics 22 Signs, Inc., Pittsburgh, PA; are approved for bidding.

2.03 EXTERIOR POST MOUNTED SIGNAGE

A. Handicapped Parking Post Mounted Signs: Shall be fabricated of .080 inch thick flat, rustproof aluminum with 3M's prismatic engineer grade (EGP) reflective sheeting applied over the surface, lettering/symbols and background shall be reflective. EGP rated life span shall be minimum 7 years, exceeding ASTM D4956 type I specification. Signs shall include mounting holes centered top and bottom to fasten signs to posts with non-corrosive fasteners (screws-bolts/nuts/washers). Signs shall utilize international symbols.

1. Handicap signs shall be 12" x 18", lettering and symbol background shall be white on blue background, both reflectorized. Lettering shall be as shown on drawings.
2. Parking penalties signs shall be 12" x 18", lettering and border red reflectorized on white reflectorized background. Lettering shall be as shown on drawings.
3. Signs shall comply with PennDot Series R regulations, all signs to have reflectorized letters/symbols, borders, and backgrounds
4. Acceptable Manufacturers/Sources include, but may not be limited to, USA Traffic Signs, Binghamton, NY (800) 613-0454; and Road Traffic Signs, Brooklyn, NY (888) 343-3771. All manufacturers shall submit product specifications, as well as, samples for Architect’s review.

B. Posts: 3" diameter galvanized steel posts with welded galvanized steel cap. Locate in galvanized steel bollards encased in concrete. See Section 055000.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Install items in locations shown and as detailed on drawings, reviewed shop drawings and/or as recommended by manufacturers.

3.02 INSTALLATION - SIGNAGE PLATES

A. Install all signs on solid walls by Mechanical Mounting.

3.03 INSTALLATION - EXTERIOR POST SIGNAGE

A. Signposts shall be set in bollards in concrete footings as detailed, see also Section 055000.

END OF SECTION 101400

SECTION 102813 - TOILET ACCESSORIES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the toilet accessory work as shown on drawings, as described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Grab Bars
2. Mirrors
3. Coat Hooks
4. Stainless Steel Shelves
5. Securing all toilet accessories with vandal proof fasteners
6. Reinforcing all drywall partitions with wood blocking and/or steel plates at all toilet accessory mounting locations.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall show gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, all as applicable for specified materials.

1.04 STANDARDS

A. Accessories shall meet ASTM Designation F446, Safety Specifications for Grab Bars and Accessories Installed in the Bathing Area.

B. Mirrors shall meet requirements and recommendations of applicable portions of the following standards:
National Association of Mirror Manufacturers NAMM.
Federal Specification FS DD M411

C. Installation of all items scheduled to be handicap accessible shall meet the accessibility provisions of the 2021 International Building Code, including but not limited to IBC Chapter 11, accessibility requirements in other IBC 2021 chapters and in ICC/ANSI A117.1 2017 Accessible and Usable Buildings and Facilities standard, and Appendix E (Supplementary Accessibility Requirements).

1.05 QUALITY ASSURANCE

A. Furnish inserts and anchoring devices which must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.

B. Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.

C. Provide products of same manufacturer for each type of unit and for units exposed in same areas, unless otherwise acceptable to Architect.

1.06 SAMPLES

A. Submit full size samples of each type of accessory and the devices for fastening same, if requested by Architect. Samples will be returned and may be used in the work.

1.07 WARRANTY

A. Provide manufacturer's warranty(s) as follows:
   1. Mirrors – 15 years against silver spoilage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The following itemized toilet accessories, unless specifically noted, are as manufactured by American Specialties, Inc. (ASI), Yonkers, NY, and are used for bidding purposes only. Other manufacturers listed below are approved for bidding subject to Architect's approval of individual items as being equal to those specified.

McKinney Parker Company
Bobrick Washroom Equipment, Inc. (including Gamco, A Division of Bobrick)
Watrous, Inc.
Miami Carey
American Dispenser Company
Bradley Corporation
A & J Washroom Accessories

B. Manufacturer's name shall not appear on any exposed surfaces of products.

2.02 FABRICATION

A. Finish: Products specified as stainless steel shall have No. 4 satin finish, unless otherwise noted. All exposed surfaces of cabinets and shelves shall be protected during shipment with a plastic PVC film which shall be easily removable after installation.

B. Fabrication: Structural assembly of all cabinet and shelf components shall be of welded construction, unless otherwise noted. All cabinet corners shall be welded and ground smooth with no open miters, unless otherwise noted.

2.03 ACCESSORIES

A. Grab Bars: Shall be Model 3800 Series. Material: Grab bar shall be fabricated of No. 18 gauge (.050 thick) 1-1/2" (38mm) O.D. type 304-L, 18-8 alloy stainless steel tubing. End flanges (and center flanges if required) shall be type 304 stainless steel (1/8" thick) pre-drilled with two screw holes and three locking dimples. Flanges shall be heliarc welded to tubing to form a single structural unit. Stainless steel covers snap over mounting flange dimples to conceal screws. Provide lengths and configuration as shown on Drawings. Strength: ability to withstand a pull of 900 pounds when properly installed. Installation: proper size stainless steel fasteners for various wall construction.

B. Shelf: Shall be Model 0694: Shelf and brackets are fabricated of No. 18 gauge, Type 304-L, 18-8 alloy stainless steel. Shelf is of one piece welded construction with 1" lip on (2) two sides and front with the front lip having a 1/4" 90° return. All edges are deburred and rounded. Brackets are spot welded to shelf. Width: five inches. Length: eighteen inches.

C. Tilt Mirror: Shall be similar to Model 0535 except furnish in sizes as shown on drawings. Frame: stainless steel Type 304 (18-8) 20 gauge, four sides welded to form a single structural unit with locking tabs welded to inside of frame. Frame snaps directly onto back plate with no visible fasteners. Frame depth tapers from 4" at the top to 1" at the bottom. Back Plate: galvanized steel 20 gauge with holes drilled in support areas. Mirror: 1/4" plate glass with electrolytic copper back, guaranteed 15 years against silver spoilage.

D. Coat Hook: Shall be Model 751, heavy duty robe hook with concealed mounting. Hook: Solid cast brass. Satin chrome plated, secured to tenon plate with three set screws.

E. Toilet Paper Dispensers, Soap Dispensers, and Paper Towel Dispenser: Furnished by Owner, installed by Contractor. Note: All dispensers shall be mechanically installed with vandal proof fasteners and wall plugs. Exception: If wall space is not available to install a soap dispenser and it must be installed on a mirror, it shall be installed with adhesive tape.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install items in locations as detailed on drawings or where directed by Owner. All accessories shall be easily accessible and clear door swings, grab bars, toilet fixtures, etc. Install all accessories plumb, square, and rigidly anchored to wall with heavy duty vandal proof fasteners.

END OF SECTION 102813

SECTION 107316 – TRANSLUCENT POLYCARBONATE-PANEL CANOPY ASSEMBLIES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the translucent polycarbonate-panel canopy assembly work as shown on the drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes the following:
1. Design, engineer, manufacture and installation of aluminum-framed assemblies glazed with translucent polycarbonate panels for Canopy Assemblies.
2. Assemblies shall be pre-engineered, designed to support loads as specified and include all columns, framing, anchors, brackets, and hardware attachments necessary to complete the structural assembly, weatherability and water-tightness performance requirements, as well as all flashings, closures, and trim.
3. Trained and factory authorized labor with supervision to complete the entire assembly installation.
4. Foundations: The engineer providing calculations for this section shall review the foundation design as detailed on drawings and verify that it is sufficient for the framing engineered under this Section; downsizing of the foundation will not be permitted.
    a. See Section 033000 for concrete.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include, but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Cast-In-Place Concrete - Section 033000.

1.03 REFERENCES

A. Labor and materials shall meet requirements and recommendations of applicable portions of reference standards listed hereafter in subsequent paragraphs.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data, recommendations and standard details for canopy assemblies to show compliance with specified requirements.
1. Submit Evaluation Reports for translucent polycarbonate-panel assemblies from ICC-ES.

B. Shop Drawings:
1. Shop drawings shall meet requirements of applicable portions of General Conditions.
2. Shop drawings shall include detailed plans, elevations and details of framing members, aluminum materials, translucent glazing materials, sealants, fasteners, anchors, and thicknesses and types of formed flashing and closures and relationship with adjacent materials.
    a. Include details of provisions for assembly expansion and contraction and for draining moisture within the assembly to the exterior.

b. Submit coordination setting plans for column anchorage/layouts.
c. All drawings shall bear the seal of a registered Professional Engineer as specified in Paragraph 1.05.A. Submittals shall include design analysis (calculations), sealed by said Engineer.

3. Verify actual measurements by field measurements before fabrication; show recorded measurements on shop drawings.

C. Samples: Submit selection and verification samples for finishes, colors and textures.
1. Aluminum Finish: Submit color charts or range samples for initial color selection. Submit finished sample of color selected.
2. Fabrication Samples: Of each framing system intersection and adjacent panels, made from 12" lengths of full-size framing members and showing details of the following:
a. Joinery.
b. Anchorage.
c. Expansion provisions.
d. Translucent polycarbonate panels.
e. Flashing and drainage.

D. Closeout Submittals. Submit the following:
1. Maintenance Data for installed products. Include precautions against cleaning materials and methods detrimental to finishes and performance.
2. Warranty: Warranty documents specified herein.

1.05 QUALITY ASSURANCE

A. Manufacturer's Qualifications:
1. Continuously engaged in translucent canopy system manufacturing with a minimum of 10 years successful experience.
2. Able to demonstrate successful performance on comparable projects.
3. Responsible for all components, including structural design.
4. All canopy assembly drawings and design analysis shall bear the seal of a registered professional engineer in the Commonwealth of Pennsylvania.

B. Installer's Qualifications:
1. Minimum of 5 consecutive year's successful experience in installation of similar systems.
2. Approved by manufacturer.

C. Pre-installation Meetings: prior to commencing with on-site canopy construction work, a Pre-Installation Conference shall be held to verify project requirements, manufacturer's installation instructions, and discuss the first class quality expectations of the Architect/Owner regarding canopy work and the Contractor's intent to provide same. All Canopy Assembly submittals shall be complete and reviewed as acceptable by the Architect prior to this meeting.

1.06 DELIVERY, STORAGE & HANDLING

A. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Sequence deliveries to avoid delays but minimize onsite storage. Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.

1. Store and handle in strict compliance with manufacturer's instructions and recommendations, including storing panels on the long edge several inches above ground, blocked and under cover to prevent warping. Protect from damage from sunlight, weather, excessive temperatures and construction operations.

1.07 WARRANTY

A. Manufacturer's Warranty:
   1. System Warranty: Provide manufacturer's warranty to repair or replace work which exhibits defects in materials or workmanship of panels and framing system. Defects are defined to include water leakage, structural failures, excessive deflection, abnormal aging or deterioration, or failure to perform as required. Warranty shall include labor and materials.
      a. Warranty Period: Manufacturer's standard, not less than 10 years from Date of Final Payment, including 5 years for hail stone penetration.
      b. Defects include, but are not limited to, the following:
         1) Delamination.
         2) Color changes exceeding requirements.
         3) Losses in light transmission beyond 6 percent from original when measured after 10 years according to ASTM D 1003.
   2. Aluminum Painted Finish Warranty Period: 20 years.
      a. Failures include, but are not limited to, checking, crazing, peeling, chalking, and fading of finishes.

B. Installer shall furnish a written two-year workmanship warranty covering repairs required to maintain canopy assemblies, including flashings, in a satisfactory condition free of leaks at no expense to the Owner.

1.08 PERFORMANCE REQUIREMENTS

A. Load Design: Provide translucent canopy assembly systems which have been manufactured, fabricated and installed to withstand environmental loads, as indicated on drawings and/or as specified herein, and to maintain performance criteria without defects, damage or failure.
   1. Load values shall be as required by IBC 2021, ASCE 7, and/or as shown on drawings (whichever is greater)
      a. Snow load plus dead load
      b. Positive wind load plus dead load
      c. Negative wind load plus dead load
      d. Seismic load
   2. Canopy assembly shall withstand winds of up to and including 85mph Vasd Nominal design wind speed; and 110mph Vult Ultimate design wind speed, per IBC 2021 1609.3 or ASCE 7.

B. Deflection Limits:
   1. Overhead Panel Assemblies: Limited to 1/60 of clear span for each assembly component of aluminum framing and panel joint in accordance with IBC.

C. Structural-Test Performance: Panel assemblies tested according to ASTM E 330, as follows:
   1. When tested at positive and negative wind-load design pressures, assemblies do not show evidence of deflection exceeding specified deflection limits.

2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not show evidence of material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not less than 10 seconds.

D. Hail Stone Impact Resistance: Panel assemblies that resist penetration by hail stone smaller than 1-3/16 inch diameter, impacting panel surface at a final velocity up to 44 ft/sec per ASTM E 822.

E. Panel Clip Performance: Corrosion-resistant clips tested to meet a minimum 90 lb/sq. ft. wind uplift when tested according to ASTM E 330.

F. Panel End Seals: Continuous factory-applied, self-adhered micro-filter tape over open panel cells.
Panel Performance:

G. Smoke-Developed Index: 450 or less according to ASTM E 84, or 75 or less according to ASTM D 2843.

H. Flame Spread: 25 or less when tested according to ASTM E 84.

I. Visible Light Transmittance (VT) Loss: 6 percent maximum over 10 years, measured in accordance with ASTM D 1003.

J. Thermal Aging: When exposed to 300 deg F for 25 minutes, interior and exterior panels tested in accordance with ASTM D 2244.

K. Impact Resistance: No failure at an impact of 500 lbf when tested according to ASTM E 695.

L. Concentrated Loading: No damage while applying a load of 600 lbf over 1 sq. ft. when tested according to OSHA, 29 CFR Section 1910.23(e)(8); and no damage while applying a load of 400 lbf over 3 inches in diameter according to ASTM E 661.

M. Water Penetration under Static Pressure: Provide panel assemblies that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

N. Thermal Movements: Allow for thermal movements from ambient- and surface-temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

O. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

PART 2 PRODUCTS

2.01 ASSEMBLIES/MANUFACTURERS

A. Translucent Polycarbonate-Panel Canopy Assemblies shall be pre-engineered, self-supporting structures complying with specifications herein. Overall shapes/dimensions of systems shall be as detailed on drawings, supported by aluminum framing and glazed with translucent polycarbonate panels.

1. Herein specifications and drawing details are based on BriteWay Pentaglas Clearspan Custom Canopies as manufactured by Kingspan Light + Air.

2.02 ASSEMBLY MATERIALS/FABRICATION

A. Translucent, Multiwall Cellular Polycarbonate Panel Assembly: Consisting of multiwall, cellular cross-section polycarbonate standing seam glazing panels with batten panel connectors, providing air-insulated spaces and coextruded UV protection. Incorporate glazing panel system into a complete aluminum framed assembly. Panel color as selected by Architect from manufacturer's full color range.

1. Panel Thickness: 12mm – 16mm thick single panel system as designed by manufacturer based on span and loading criteria.

B. Aluminum Framing Systems

1. Components: Manufacturer's standard extruded-aluminum members of thickness required and reinforced as required to support imposed loads, all as designed by manufacturer's engineer. Downsizing of columns/beams detailed will not be permitted.
2. Aluminum Finish: All exposed aluminum surfaces shall be free of scratches and other serious blemishes and receive a Fluoropolymer Paint Coating that meets or exceeds American Architectural Manufacturer's Association Standard AAMA 2605, consisting of minimum 2 coat 70% Kynar 500/Hylar 5000 resin base. Coating shall be 1.2 mils thick. Custom color as selected by Architect to match other building materials.
    a. Provide Owner with touch up paint to match painted aluminum finish(es).
3. Aluminum: Alloy and temper recommended in writing by manufacturer for type of use and finish indicated.
    a. Sheet and Plate: ASTM B 209.
    b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
    c. Extruded Structural Pipe and Tubes: ASTM B 429.
    d. Structural Profiles: ASTM B 308.
4. Fabricate aluminum components that, when assembled, have the following characteristics:
    a. Profiles that are sharp, straight, and free of defects or deformations. Radius as detailed.
        1) Aluminum tube rafters (radiused) and purlins.
        2) Aluminum beams/columns.
        3) Aluminum base covers for columns.
        4) All shapes/sizes as designed by manufacturer based on span and loading criteria.
    b. Accurately fitted joints with ends coped or mitered.
    c. Internal guttering systems or other means to drain water passing through joints and moisture migrating within assembly to exterior.
5. Fabricate aluminum sill closures with weep holes and for installation as continuous component.
6. Reinforce aluminum components as required to receive fastener threads.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning skylight components.

D. Fasteners and Accessories: Manufacturer's standard, corrosion-resistant, nonstaining, and nonbleeding fasteners and accessories; compatible with adjacent materials.

1. At closures, retaining caps, or battens, use ASTM A 193, 300 series stainless-steel screws.
2. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.

3. At movement joints, use slip-joint linings, spacers, and sleeves of material and type recommended in writing by manufacturer.

2.03 ACCESSORIES

A. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.

B. Anchor Bolts: ASTM A 307, Grade A, galvanized steel.

C. Column Base Plates: ASTM A36, Grade 36, hot dipped galvanized after fabrication according to ASTM A123.

D. Concealed Flashing: Corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.

E. Exposed Flashing and Closures: Aluminum sheet not less than 0.040-inch thick, finished to match framing.

F. Framing Gaskets: Manufacturer's standard gasket system with low-friction surface treatment designed specifically for retaining translucent polycarbonate panels.

G. Frame-System Sealants: As recommended by manufacturer, complying with Section 079200.

H. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

PART 3 EXECUTION

3.01 INSPECTION

A. Installer shall inspect area to receive canopy assemblies to determine that the conditions are in accordance with shop drawings and specifications. Any variance shall be recorded in writing and corrections made before beginning installation.

3.02 ERECTION

A. Erect translucent canopy assemblies in strict accordance with approved shop drawings as supplied by manufacturer and approved by Architect.

1. Fastening and sealing shall be in accordance with the manufacturer's recommendations. Anchor work securely to supporting structure, but allow for differential and thermal movement.

B. Fit joints between aluminum components to produce hairline joints free of burrs and distortion.

C. Rigidly secure nonmovement joints.

D. Install anchors with separators and isolators to prevent metal corrosion, electrolytic deterioration, and immobilization of moving joints.

E. Install components plumb and true, in alignment with established lines and elevations.

F. Isolate between aluminum and dissimilar metals with a protective coating or plastic strip to prevent electrolytic corrosion.

G. All aluminum shall be clean before sealants are applied. Fit joints between aluminum components to produce hairline joints free of burrs and distortion.

H. Remove all protective coverings on panels immediately after installation.

I. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove labels, part number markings, sealant smears, handprints and construction dirt from all components. Touch up damaged coatings and finishes and repair minor damage to eliminate all evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

END OF SECTION 107316

SECTION 122400 - WINDOW SHADES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the window shade work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
   1. Manually operated sunscreen roller shades for exterior aluminum window framing.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

1.03 PERFORMANCE REQUIREMENTS / REFERENCE STANDARDS

A. Fire: NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

B. Anti-microbial: ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi. 'No Growth' per ASTM G 21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

C. Window Covering Manufacturers Association (WCMA): WCMA A100.1 - Safety of Window Covering Products; 2022 (implementation of cordless lift blinds, wand operated verticals, and chain tension device holddowns).

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall show details of construction, hardware, methods of attachment and/or anchoring, all as applicable for specified materials. Shop drawings shall include the following:
   1. Elevations at large enough scale to indicate shade layout, seam / batten locations and coordination with surrounding conditions.
   2. Head, jamb and sill details as necessary to coordinate work with surrounding conditions and construction.
   3. Shade schedule coordinating room number, window type, opening size(s), quantities and key to details.
   4. Field verification of all dimensions shall be included on shop drawing submittals.

C. Samples:
1. Minimum 3" X 5" fabric swatches of manufacturer's fabrics. Provide full-size mock-ups of multiple fabric selections for final selection by Architect.
2. Standard aluminum finish color samples from manufacturer's range of standard colors.

D. Manufacturers' Warranty and Installation and Cleaning and Maintenance Instructions, including stain removal methods.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Installer trained and certified by the manufacturer with 5 years minimum experience installing products comparable to those specified in this section.

B. Do not fabricate shades without obtaining field dimensions for each opening. Coordinate construction of surrounding conditions to allow for timely field dimension verification.

C. Shade cloth seconds are not acceptable.

D. Mock-Up: Provide a mock-up (manual shades only) of one roller shade assembly for evaluation of mounting, appearance and accessories.
1. Locate mock-up in window designated by Architect. Do not proceed with remaining work until, mock-up is accepted by Architect.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver shades to project in labeled protective packaging. Uniquely labeled to identify each shade for each opening. Schedule delivery to prevent delays to completion of work but to minimize on site storage time.

B. Store materials in a dry secure place. Protect from weather, surface contaminants, corrosion, construction traffic and all other potential damage.

C. Maintain ambient temperature between 60 and 85 degrees Fahrenheit and a relative humidity between 20% and 50% for a period starting 24 hours before installation of window shades and maintain until Owner's final acceptance.

1.07 WARRANTY

A. Roller Shade Hardware, Chain and Shadecloth: Manufacturer's standard non-depreciating twenty-five year limited warranty from Date of Final Payment.

PART 2 PRODUCTS

2.01 PRODUCT(S) / MANUFACTURER (S)

A. Manufacturer(s): Roll-up Window Shades, as hereinafter specified, are as manufactured by MechoShade Systems, Inc., Long Island City, NY.
1. Additional shade manufacturers approved for bidding products in compliance with these specifications include the following, subject to verification by the Architect:

a. Clutch Operated FlexShade NEXD Draper Manual Shades with XD Clutch by Draper, Inc., Spiceland, IN, as represented by Plymouth Interiors, provided with heavy duty clutch mechanism and spline attachment method of attaching fabric to roller tube; all other features shall conform to herein specifications.
b. SWFcontract Manual Roller Shades, Middleton, WI.

B. Product(s) include the following:
1. Mecho/5x (3 1/16" deep x 3 ¾" high) Drive-end Bracket with SnapLoc Fascia", manually operated, chain-driven shades.

2.02 SHADE CLOTH

A. Sunscreen Material (Solar Fabric/Shadecloth): Shall be as selected by Architect from MechoShade Systems' EuroTwill "6000" Series: reversible broken twill weave cloth, 70% PVC and 30% polyester, mesh weight 13.12 oz/yd2, fabric thickness 0.028", 3% Open.
1. Color: As selected by Architect from manufacturer's standard colors.

2.03 SHADE BAND

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.
1. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.
2. Shade Band and Shade Roller Attachment:
a. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55" in diameter for manual shades, and less than 2.55" for motorize shades are not acceptable.
b. Provide for positive mechanical engagement with drive / brake mechanism.
c. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable / replaceable with a "snap-on" snap-off" spline mounting, without having to remove shade roller from shade brackets.
d. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.
e. Any method of attaching shade band to roller tube that requires the use of: adhesive, adhesive tapes, staples, and/or rivets are not acceptable.

2.04 SHADE FABRICATION

A. Fabricate units to completely fill openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise. Comply with Manufacturer's edge clearance standards and recommendations. Shades shall fit windows with maximum protection from light streaks.
1. Window shades shall be continuous between jambs or between columns as required (i.e., window shades shall not be individual per window for windows in series). Window shade manufacturer shall be responsible for ensuring proper tracking and rolling of the shadecloth for the width of shade.

B. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed

edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8” in either direction per 8’-0” of shade height due to warp distortion or weave design. Fabricate hem as follows:

1. Sunscreen Material: Concealed hemtube.

C. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

D. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment as acceptable to Architect. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

1. Horizontal seam / batten placements shall be coordinated to align with horizontal window mullions.

E. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

2.05 SHADE COMPONENTS

A. Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.
2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.
3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and /or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.
2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.
3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.
4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer’s design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.
5. Provide shade hardware system that allows multi-banded manually operated shades to be capable of smooth operation when the axis is offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve, for a 12 degrees total offset.
6. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit

connectors for drive mechanism connection to shade roller tube are not acceptable

7. Provide shade hardware constructed of minimum 1/8" thick plated steel or heavier as required to support 150 percent of the full weight of each shade.
8. Drive Bracket / Brake Assembly:
    a. MechoShade Drive Bracket Model M5 shall be fully integrated with all MechoShade accessories, including, but not limited to: SnapLoc fascia, center supports and connectors for multi-banded shades.
    b. M5 drive sprocket and brake assembly shall rotate and be supported on a welded 3/8" teel pin.
    c. The brake shall be an over -unning clutch design which disengages to 90 percent during the raising and lowering of a shade. The brake shall withstand a pull force of 50 lbs. in the stopped position.
    d. The braking mechanism shall be applied to an oil-impregnated hub on to which the brake system is mounted. The oil impregnated hub design includes an articulated brake assembly, which assures a smooth, non-jerky operation in raising and lowering the shades. The assembly shall be permanently lubricated. Products that require externally applied lubrication and or not permanently lubricated are not acceptable.
    e. The entire M5 assembly shall be fully mounted on the steel support bracket, and fully independent of the shade tube assembly, which may be removed and reinstalled without effecting the roller shade limit adjustments.
9. Provide appropriate mounting brackets and shims as required to suit window head details as shown on drawings (field verify all dimensions and illustrate fully on Shop Drawing Submittals). All exposed surfaces shall be provided with baked-enamel finish to match fascia.
    a. Brackets for windows: Also refer to Paragraph 2.01.B.1.

C. Drive Chain: Continuous loop T304 stainless steel beaded ball chain, 100 pound minimum breaking strength warranted from breaking for the life of the shade system hardware under prescribed operation. Provide upper and lower limit stops.

1. Chain Retainer: Chain tensioning device complying with WCMA A100.1 – 2022. Mounting shall be as selected by Architect. Contractor to field verify mounting locations/heights prior to fabrication of shades.
2. Limit stops: Bead stops affixed to the chain maintain consistent shadeband alignment at the top and bottom of shade travel across multiple shades, and help prevent shade damage resulting from unmanaged user control.

D. Fascia:

1. Continuous removable extruded aluminum fascia, with baked-enamel finish, that attaches to shade mounting brackets without the use of adhesives, magnetic strips, or exposed fasteners.
2. Fascia shall be able to be installed across two or more shade bands in one piece.
3. Fascia shall fully conceal brackets, shade roller and fabric on the tube.
4. Provide bracket / fascia end caps where mounting conditions expose outside of roller shade brackets.
5. Notching of Fascia for manual chain shall not be acceptable.

2.04 FINISHES

A. Shade Fabric: As specified in Paragraph 2.02.

B. Aluminum Components: Finish color shall be as selected by Architect and/or Owner from any of the

Manufacturer's standard PPG Duracron baked enamel colors, selected anodized aluminum finish colors, or powder coated RAL finish colors.

C. Steel Components: Cadmium-plated, satin-finished, or bonderized prior to painting with Manufacturer's standard baked-enamel finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrate and conditions for installation. Do not commence installation until conditions are satisfactory. Commencement of installation indicates acceptance of site conditions by Contractor.

3.02 INSTALLATION

A. Installers shall be qualified craftsmen.

B. The installation of the shades shall be made in accordance with the approved plans and specifications, and in compliance with the Manufacturer's instructions for the type of mounting and operation required. Provide units level, plumb, square, true, and securely anchored in place with recommended hardware and accessories to provide smooth operation without binding.

C. Install units within the following tolerances:
1. Maximum variation of gap at window opening perimeter: 1/4", per 8'-0" (+/- 1/8") of shade height.
2. Maximum offset from level: 1/16" per 5'-0" of shade width.
3. Locate so shade band is not closer than 2" to interior face of glass.
4. Allow proper clearances for window operation hardware.

3.03 ADJUSTING

A. Adjust hardware for smooth operation. Adjust shade and shadecloth to hang flat without buckling or distortion. Replace any units or components which do not hang properly or operate smoothly.

3.04 CLEANING

A. Touch up damaged finishes and repair minor damage in order to eliminate evidence of repair. Remove and replace work that cannot be satisfactorily repaired.

B. Clean exposed surfaces, including metal and shadecloth, using non-abrasive materials and methods recommended by the Shadecloth Manufacturer. Remove and replace work which cannot be satisfactorily cleaned.

3.05 DEMONSTRATION

A. Demonstrate operation method and instruct Owner's personnel in the proper operation and maintenance of the window shade systems.

END OF SECTION 122400

SECTION 123216 - MANUFACTURED PLASTIC LAMINATE CLAD CASEWORK

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the plastic laminate clad casework as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. The Plastic Laminate Casework supplier shall verify all dimensions before fabricating the casework. Field measurements shall be taken to verify that the casework will fit into the designated space. Entryways, corridors and door openings shall be verified to ensure that the casework be manufactured in a manner to permit it to be moved through properly into place.

C. The General Contractor shall coordinate with the casework supplier all requirements for concealed support blocking to be built into new construction.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Rough Carpentry - Section 061000.

C. Plastic Fabrications - Section 066000.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Shop Drawings: Shop drawings shall meet requirements of application portions of General Conditions. Shop drawings shall show gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, all as applicable for specified materials.

D. Detailed shop drawings, complete with rough-in dimensions/locations, shall be prepared and submitted to the Architect for approval within time period specified in Section 011000. Fabrication shall not be started until approved shop drawings have been returned by the Architect.

1. Drawings shall include details of all modified cabinetry, millwork, finish carpentry items, etc. Draw profiles, sections, and views of items especially manufactured for this work, at a scale large enough to permit checking for design conformity.
2. Make assembly and installation drawings to show methods of fastening, bracing, and connecting to work of other trades.
3. Prior to fabrication of casework field check project site to assure proper fit of materials being

provided. Adjust drawings as necessary to insure proper fit of all casework and equipment to building conditions.

E. Samples to be submitted:
1. High-pressure decorative plastic laminate color samples for exposed and interior surfaces of casework.

1.04 STANDARD OF QUALITY

A. Design and arrangement of casework shown on plans as herein specified has been determined after considerable study and planning. This contractor will be required to adhere to the requirements shown on the drawings and specifications. The approval of a manufacturer other than specified does not necessarily indicate that the manufacturer's standard products are acceptable. The specifications indicate required design and styling, sizes, arrangements and detailing. They indicate a minimum standard of materials, methods and workmanship.

B. Cabinetry shall be in accordance with the current published standards of the following associations or agencies, as applicable unless otherwise specified herein:
1. North American Architectural Woodwork Standards – Premium Grade, Latest Edition.
2. Cabinet manufacturer shall submit panel manufacturers' current published specification stating ANSI core properties and NEMA finish properties.

C. Casework, where indicated, shall be fabricated and installed in accordance with the Contract Documents and the American with Disabilities Act (ADA) so that casework is accessible and usable by people with disabilities according to the ADA Accessibility Guidelines (ADAAG).

D. Manufacturer and/or Fabricator Qualifications: must have been in the manufacture of Plastic Laminate casework for at least five consecutive years.

E. Installer Qualifications: Installers shall be approved by the casework manufacturer and have a minimum 3 years documented experience installing manufacturer's casework.

1.05 SHIPPING

A. Large pieces of casework shall be made and shipped in sections in order to facilitate handling and getting through ordinary sized door openings. All casework shall be set up in the factory, taken apart, marked for identification, and crated, if necessary. Plumbing fixtures, sinks, waste fittings and lines, supply lines shall be packed separately and marked for item identification.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet work and utility roughing-in are complete, and a minimum temperature of 70°F is maintained until the building is turned over to the Owner.
1. If temporary heating system has been approved per Section 015000, temporary heating system shall be in operation 24 hours a day seven days a week until permanent heating system is in operation.
2. The General Contractor shall be responsible to maintain relative humidity between 35% to 65% within the space prior to, during, and after installation. The General Contractor shall employ

dehumidification equipment as required to install casework according to herein specifications and as required to meet construction schedule.

1.07 WARRANTY

A. Furnish a written warranty that Work performed under this Section shall remain free from defects as to materials and workmanship for a period of five (5) years from date of final payment. Defects in materials and workmanship that may develop within this time are to be replaced without cost or expense to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Plastic Laminate Casework shall meet herein specifications, unless otherwise indicated, and include the following features.

B. Manufacturers approved for bidding this project include the following (Note: All manufacturers shall modify their standard cabinetry to meet herein specifications and drawing dimensions):

1. Case Systems, Inc., Midland, MI.
2. Stevens Industries, Inc. Teutopolis, IL.
3. Wood Metal Industries, Selingsgrove, PA. (Institutional Cabinets and Casework, a Division of Wood-Mode, Inc., Kreamer, PA)
5. Spektrum Laminate Furniture and Architectural Millwork by Kewaunee
3. TMI Systems, Dickinson, ND.

C. Custom cabinet fabricators may be approved, if the General Contractor submits fabricator qualifications, experience, and casework samples complying with herein specifications and drawing dimensions for approval by the Architect during bidding. Refer to Sections 012513 - Substitutions and Section 012513.25 - Substitution Request Form.

2.02 CASEWORK MATERIALS

A. Panels:
   1. High Pressure Plastic Laminate:
      a. Exposed exterior vertical surfaces and interior vertical surfaces of open and/or glass door cabinets shall have a decorative type high pressure laminate finish (HPL) meeting the performance requirements of ANSI/NEMA LD 3:2005, generally 0.028” - 0.030” thick, for vertical surfaces. Laminates shall be as selected by the Architect from any of the following Wilsonart Products:
         1) Wilsonart® Type 335, 0.028” thick (ISO 4586, Grades VGS and VGP)
            i. Color selections from any of Wilsonart’s solids, woodgrains, stones, abstracts, metal looks, residential collection, and/or fibers & textiles colors.
            ii. Finish selections from any of Wilsonart’s laminate surface textures (Premium, HD Premium, Matte, Fine Velvet, and/or Standard), including finishes with Aeon.
      b. Interior cabinet surfaces (of cabinets with solid doors) shall have a laminate (liner) finish, minimum 0.020” thick. Laminate colors shall be as selected by the Architect from any of the following Wilsonart Products:

1) Wilsonart® Type 101 or Wilsonart® Type 182. Laminate conformance standard: ISO 4586, Grade CLS.

c. Laminates from Formica and/or Nevamar/Panolam products may be considered if available in colors/finishes as specified by Wilsonart.

2. Core Materials:
   a. Particleboard Core - shall be Grade M-3 Industrial, according to the American National Standard (ANSI) for Mat-Formed Wood Particleboard, ANSI-A208.1-1999 and shall meet or exceed all requirements set forth by said document.
   b. Hardboard core - shall be tempered with a “S2S” surface finish and must meet or exceed the hardboard product standard ANSI-A135.5.
3. Edge Banding: All exposed cabinet edges shall be covered with PVC edge banding applied with hot melt adhesive and radiused by automatic trimmers. Hand tool applying and trimming of edge shall not be allowed. Edging shall be available in coordinating and/or contrasting color options.
   a. Cabinet edges shall be covered with minimum 3mm thick PVC edgebanding.
   b. Edging for doors and/or drawer fronts shall be covered with 3mm thick PVC edgebanding.

B. Metal Parts: Shall be appropriately protected from oxidation by painting or anodizing at the option of the manufacturer.

C. Hardware:
1. Hinges: 5-Knuckle hinges / reveal overlay. Hinges shall be model #HH020 .095" steel five-knuckle hospital-tip, institutional grade (grade 1 per ANSI/BHMA A156.9) quality with .187" diameter tight pin. Residential, kitchen type pivot, plain butt, or hinges with removable pins “shall not be acceptable”. Each hinge shall be secured with a minimum of nine No. 8 screws. Hinge shall permit door to swing 270 degrees without binding. Doors less than 48" in height shall have two hinges. Doors over 48" in height shall have three hinges. A minimum of three finishes shall be available -black, almond and platinum in an epoxy powder coat.
2. Pulls: One pull shall be located at the centerline of the drawer, regardless of width, to ensure ease of operation and maximize drawer slide life. Model #DP070 aluminum wire pull, 8mm diameter with 96mm O.C. mounting holes, in color as selected by Architect – clear anodized, black, almond or gray.
3. Mod-eez®: All cabinet body components shall be secured utilizing concealed interlocking mechanical fasteners as approved by the Architectural Woodwork Institute Quality Standards 8th Edition -2003 Sections 400A-T-12, 400B-T10 and 1600-T-11. The Mod-eez® is also an approved fastener by the Woodwork Institute “Manual of Millwork”.
   a. Dowel pin construction of cabinet body components is also acceptable.
4. Plastic Shelf Clips
   a. Shelf clips shall be injected molded clear plastic, with a double pin engagement 32mm on center and shall have 3/4" and 1" anti-tip locking tabs as approved in AWI 400B-T-9 for premium grade.
5. Locks: Five disc tumbler cam locks with chrome plated steel face plate. All locks keyed alike or keyed differently by room and master keyed. Shall permit a minimum of 50 keying options. Lock core is removable permitting owner to easily change lock arrangements.
   a. Furnish 2 keys per lock and master keys.
   b. All cabinets shall be provided with locks, unless noted otherwise.
   c. Inactive door of base and wall cabinets shall be secured by using an elbow catch or a chain pull for tall cabinets.
6. Chain Pulls,
   a. Zinc plated, spring loaded door catch used to hold door securely shut.

7. Chain Stops,
    a. Zinc plated looped chain used to limit door swing, mounting plate at each end of chain shall use (4) #7 x 5/8" screws to secure to cabinet door and end panel.
    b. All doors which when open beyond 90° shall make contact with walls, other casework or other obstructions, shall be equipped with chains to prevent contact with these surfaces.
8. Catch – provide appropriate catch for cabinet:
    a. Elbow Catch; Chrome plated, spring loaded door catch used to hold door securely shut.
    b. Roller Catch (not used with self-closing hinges); Heavy-duty, spring-loaded roller, with molded plastic bumper mounted at door top to keep door securely shut.
    c. Magnetic Catch (not used with self-closing hinges); White plastic housing with two 32mm spaced, elongated holes for screw-attachment to allow adjustability.
9. Coat Hooks: Single prong and double prong zinc plated.
10. Closet Rods: 1" diameter zinc plated rod with captive sockets.
11. Mirrors: Shall be 1/4" float/plate glass with electrolytic copper back, guaranteed 15 years against silver spoilage, aluminum framed. Tall Storage mirrors to be 8" x 10".

D. Tall Storage Cabinets shall include accessories as detailed on drawings. Accessories include, but are not necessarily limited to:
1. Coat Rod.
2. Mirror.
3. Coat Hook mounted to the side wall a maximum of 48" above finish floor.

2.03 CASEWORK (CABINET) CONSTRUCTION

A. Hereinafter references to mechanically fastening cabinet components may be dadoed, doweled, glued, and pinned in lieu of mechanical fastening as per acceptable manufacturers' standard practices.

B. General Cabinet Construction
1. All structural components shall be min. 3/4" thick with balanced surfaces.
2. All fastening devices and screws shall be treated to deter or resist corrosion.
3. Mounting stretchers are 3/4" thick structural components fastened to end panels by mechanical fasteners, and are concealed by the cabinet back.
4. When the rear of a cabinet is exposed (i.e., mobile cabinets), a separate finished 3/4" thick decorative laminate back panel shall be applied.
5. A 5mm diameter row hole pattern 32mm (1-1/4") on center shall be bored in cabinet ends for adjustable shelves. This row hole pattern shall also serve for hardware mounting and replacement and/or relocation of cabinet components.
6. All door fronts and finished ends shall be balanced construction with "high-pressure" laminate bonded to both sides of a M-3 engineered board core, edged per Paragraph 2.02.A.3.b.
7. Fixed interior components such as fixed shelves, dividers, and cubicle compartments shall be full 3/4" thick M-3 engineered board core attached with concealed interlocking mechanical fasteners.
8. All joints are tight fitting and will not rupture or loosen due to the following:
    a. Dimensional changes in the engineered board.
    b. Racking of casework during shipment and installation.
    c. Normal use.
    d. Seismic shock as tested and approved by the Woodwork Institute for casework used in schools and hospitals.

9. Refer to drawings for sizes of cabinets (width x height x depth), modify manufacturer's standard dimensions as required. Toe spaces shall be consistent 4" high.
10. All base, tall, and wall cabinets shall be provided with shelves (number of shelves indicated by dash lines on drawing elevations) and solid bottom fixed shelf.

C. Box
1. Each end panel to be secured with mechanical fasteners for a total tensile strength of 2,450 lbs (excluding tall cabinets).
   a. Exposed ends of base and/or tall cabinets shall extend to within a minimum of 2" of finished floor, in order that no unfinished surface is exposed above the adhered rubber base once cabinets are shimmed and leveled.
2. All tall cabinet end panels to be secured with mechanical fasteners for a total tensile strength of 3,850 lbs. All tall cabinets to also be provided with an intermediate fixed shelf to maintain internal dimensional stability under heavy loading conditions as well as an intermediate 3/4" thick stretcher located behind the back panel and be secured to the cabinet ends with mechanical fasteners. Where an intermediate shelf is present, the stretcher shall also be secured to the shelf with #8 x 2" plated flat head screws.

D. Backs, all back panels shall be;
1. 1/2" thick, surfaced both sides for balanced construction.
2. Fully captured on both sides and bottom, except as follows; face-mounted, stapled on backs are not acceptable.
   a. Cabinets blocked out for plumbing services shall be provided with removable backs.

E. Base
1. Individual bases constructed of water resistant glue type plywood or preservative treated 2 x 4 lumber framing, factory applied to base and tall cabinets shall support and carry the load of the end panels, and the cabinet bottom, directly to the floor. The base shall be let in from the sides and back of the cabinet to allow cabinets to be installed tightly together and tight against a wall, also to conceal the top edge of applied rubber base molding (not supplied by casework manufacturer). There shall be a front to back center support for all bases over 30" wide.

F. Doors
1. Solid Plastic Laminate Doors: Solid 3/4" M-3 engineered board core with HPL front and liner back used for balanced construction. Also see Paragraph 2.03.B.6.

G. Adjustable Shelves
1. Laminate Shelves
   a. Adjustable shelves shall be M-3 engineered board core with balanced surfaces and have a nominal .020" thick PVC front edge.
   b. Adjustable shelves 36" wide and over shall be 1" thick.
   c. All adjustable shelves in open cabinets shall be 1" thick, except for special use cabinets such as mail, cubical or locker type units.
   d. All other shelves shall be 3/4" thick.
   e. Shelves shall be full depth unless otherwise noted on drawings.
   f. Number of shelves per cabinet indicated by dash lines on drawing elevations.

H. Cabinet End Panels, Filler Panels, Miscellaneous Trim, and/or Scribes to Wall: Shall be 3/4" thick M-3 engineered board core with HPL surface on the exposed face to match casework and backer sheet suitable

to provide balanced construction on non-exposed surfaces.

1. Exposed sides of filler panels to floor shall extend to within a minimum of 2” of finished floor, in order that no unfinished surface is exposed above the adhered rubber base once cabinets are shimmed and leveled.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall be performed by the manufacturer's authorized representative and shall conform to the manufacturer's procedures. All connecting hardware, fillers, and closure panels shall be provided as required. The casework shall be accurately placed, set plumb, and secured to the wall and/or floor.

B. All casework shall be delivered to building, uncrated, placed in its proper location, assembled, leveled, secured where required to floors or walls, neatly scribed and fitted.

C. The Contractor shall have an experienced foreman on the job during installation of casework. The Contractor shall be responsible for correcting and/or replacing any damaged work resulting from installation of casework furnished under this section.

D. The Contractor shall provide sufficient anchoring methods or systems, such as toggle bolts, lead expansion shields and/or drywall toggler systems, as required to secure casework to new as well as existing walls so that casework will not detach from the walls when fully loaded.

1. Base and tall cabinets shall be anchored to the subbase with screws. Screws shall be counter-sunk and the holes plugged with material to match bottom finish of base and tall cabinets.

E. Remove all debris, dirt and rubbish accumulated as a result of work performed under this section.

F. After installation, Contractor shall examine and adjust all operating parts of casework (i.e., doors, locks, etc.).

END OF SECTION 123216

SECTION 312000 - EARTH MOVING

PART 1 GENERAL

1.01 SCOPE

A. This section of the specifications includes all labor, supervision, equipment, tools, materials, transportation and all means of construction necessary to perform the excavation, filling, rough grading and finish grading as shown on drawings, described in this specification, or as is necessary to install new materials or equipment and to complete the project in a first-class manner.

B. Cooperate with the other Contractors holding contracts for certain phases of work so as to assure the proper incorporation of or provisions for all items which will be furnished and placed by others.

1.02 CONTRACTOR'S RESPONSIBILITY

A. It is the intent of these specifications to produce satisfactory stable fills and embankments, and these specifications shall be considered minimum requirements which shall be supplemented by the Contractor with additional work if necessary, in order to secure stable fills and embankments.

B. In addition to satisfying and complying with all other requirements, conditions, and provisions contained in the contract documents, the Contractor shall, without extra compensation, reconstruct all fills and embankments that are displaced by any reason or cause whatsoever during their construction or within one (1) year after the entire contract work is completed and accepted.

1.03 RELATED WORK INCLUDED IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Cast-In-Place Concrete - Section 033000.

C. Erosion & Sedimentation Controls – Section 312500.

D. Grasses - Section 329200.

E. Storm Drainage Utilities - Section 334000.

F. Excavation for Mechanical and Electrical Work - Related Contracts.

1.04 CODES AND REGULATIONS

A. The Contractor shall comply with the Federal Occupational Safety & Health Act (OSHA) requirements for excavation, trenches, and earthwork.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions,

and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Test Reports / Submittals on construction materials (i.e.: aggregates, soils) are to be dated no later than one year prior to construction starting date of this project.

D. Proofroll evaluations and design bearing verifications by the Contractor's testing laboratory/agency.

E. Three (3) samples of all aggregate base and fill materials.

F. If requested by Engineer, submit petrographic analysis and laboratory expansive property testing on all borrow soils and aggregates.

G. Upon completion of site work, including storm systems as specified in Section 334000, submit as-built site plan/storm water drawings, complete with locations/elevations sealed and certified by the Contractor's Registered Surveyor and/or Registered Engineer as specified in Paragraph 1.12.

H. Compilations of all Construction Testing as specified herein shall be submitted with the Contractor's Closeout Submittals as specified in Section 017700.

1.06 CONTRACTOR'S TESTING LABORATORY/AGENCY

A. The General Contractor shall retain and pay for the services of an independent qualified laboratory/agency to perform initial and final subgrade evaluations (proof roll), sampling, testing and inspecting of materials entering into the placing of compacted, controlled fill, finish grading materials, utility backfills, and other services as required for quality control. Such laboratory/agency shall be submitted to the Architect for approval.

B. Quality Assurance:
1. The testing laboratory/agency will be qualified to the Owner's approval in accordance with ASTM E329-21 "Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection."
2. Earth work testing and inspection must be performed under the supervision of a qualified person with a degree in geology or civil engineering.
3. Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.

1.07 TEST REQUIREMENTS

A. In-place compaction density tests shall be performed on all fill materials. Tests shall be performed in locations and in quantities as selected by the testing laboratory/agency. The Contractor shall include in the amount of the Base Bid, the number of compaction tests required to comply with the following frequencies:
1. Fill and backfill material within the building footprint and 10'-0" beyond: compacted to 95% of maximum dry density, at moisture content within 2% of optimum, per Modified Proctor Test ASTM D1557 - minimum of one (1) test location per every lift per 500 square feet.

2. Fill and backfill material within site areas to be surfaced and minimum 3’-0” beyond (10’-0” beyond any structure footprint): compacted to 95% of maximum dry density, at moisture content within 2% of optimum, per Modified Proctor Test ASTM D1557 - minimum of one (1) test location per every lift per 2,000 square feet.
3. Fill and backfill material within non-surfaced areas 10’-0” beyond the building footprint: compacted to 90% of maximum dry density, at moisture content within 3% of optimum, per Modified Proctor Test ASTM D1557- minimum of one (1) test location per lift per 5,000 square feet.
4. Fill and backfill material within trenches: Place in 6” loose lifts and compact to density as required above dependent upon location of trench - minimum of one (1) test location per every two vertical feet (2'-0”) per fifty lineal feet (50'-0”) of trench on center.

B. Three (3) copies of said test results shall be submitted to the Architect’s office with required accompanying information (i.e., Project Name, Testing Agency Name, Prime Contractor Name, date and location of test).
1. The Contractor’s testing agency shall electronically distribute, in advance of hard copy mailing, to the Architect and the Owner’s Representative, all test reports within 24 hours of testing. Under no circumstances shall the Contractor remove the Architect and/or Owner’s Representative from the electronic and/or hard copy distribution of test reports or change the specified frequency of testing. Electronic address(es) for the Architect and the Owner’s Representative will be issued during the Initial Job Conference meeting.
2. Compilations of all Construction Testing as specified herein shall be submitted with the Contractor's Closeout Submittals as specified in Section 017700.

C. Verification, inspection and testing of soils and aggregates shall also be in compliance with the 2021 IBC (including, but not limited to, Section 110 Inspections and Chapter 17 Special Inspections - Sections 1704 and 1705, specifically 1705.6 Soils, including Table 1705.6, as applicable to this specific project). In case of conflict between any of the above requirements and the IBC, the more stringent requirements shall govern.

1.08 BASIS OF CONTRACT

A. The excavation work shall be performed on an "Unclassified Basis", that is, the removal of soil, shale, rock formations regardless of type or hardness of such formations, existing foundations, abandoned septic tanks, construction debris, fill, topsoil, deleterious material, and every kind of subsurface condition encountered in the Contract area, which includes conditions below the footing elevations - the cost of such excavations being included in the contract price at the time of bidding. No extra or additional compensation for excavation will be paid under this Contract. Contractor must assume all risks in excavating and make his own investigation of sub-surface conditions. Such investigations may be performed only under time schedules and arrangements approved in advance by the Owner.

1.09 QUALITY ASSURANCE

A. A Pre-Installation Conference shall be held at the job site prior to any earthwork on-site. The purpose of this meeting shall include, but not be limited to, a discussion on the coordination of all Prime Contractors and evaluation of field conditions. In addition to the Project Architect, Each Prime Contractor, his earthwork subcontractor, and his testing agency shall attend the Pre-Installation Conference along with the building Owner's Representative.
1. A second Pre-Installation Conference shall be held prior to finish grading and the placement of

topsoil and subsequent seeding as specified in Section 329200.

B. Contractor shall contact the County Conservation District a minimum of seven days prior to any earth work activity on the Project Site.

C. It shall be the Contractor's responsibility to contact utility companies prior to any construction as the locations of utilities shown on the plans are approximate and possibly incomplete. Contractors shall call 1-800-242-1776 (PA One-Call) three days prior to earth work activity on the Project Site.

1.10 SHORING AND PROTECTION

A. Provide all shoring and bracing necessary to prevent cave-in until the backfilling is completed. Erect and maintain fences, guard rails, lights and such other protection as may be necessary for safety and for the protection of the property of the Owner, as well as the property of others.

B. Any surcharged loads from equipment that would be applied to soils near existing foundations, temporary shoring, excavations, etc., shall be determined and verified by the Contractor prior to use. Should the verification require an engineer, the engineer shall be hired by and paid for by the Contractor. The Contractor shall reinforce, as necessary, temporary shoring prior to bringing any additional equipment on site and near the excavation.

1.11 BLASTING

A. No blasting shall be performed on the Project Site.

1.12 ENGINEERING LAYOUT

A. Prior to beginning any excavation or grading work, the General Contractor shall have a Registered Engineer and/or Surveyor establish all construction lines, storm system lines/elements, finish grades and elevations for location and construction of the Project. The as-built site plan, complete with locations, contours and elevations certified and sealed by the Registered Engineer/Surveyor, shall be submitted prior to final payment.

1. The General Contractor's as-built record drawings shall include underground utilities' locations and elevations and pads as provided by the Mechanical and Electrical Contractors.

1.13 PRECAUTIONS

A. Do not damage or disturb any existing monuments, benchmarks, or other markers. Provide suitable protection where required before starting work. Restore any damage to original condition or repair as directed at no additional cost.

B. The Contractor shall execute excavation work in a manner to ensure existing building against any damages resulting therefrom. If at any time, the integrity of existing building and foundation appears to be endangered, the Contractor shall cease operations and immediately notify the Architect and Owner, at the same time taking all necessary precautions to support such areas as may be affected. If the Architect and/or Owner considers additional bracing, underpinning, or shoring necessary to safeguard existing structure, the Contractor shall be responsible for installing bracing, underpinning, or shoring at the Contractor's expense.

C. Any piping or conduit encountered shall be temporarily supported and maintained until permanent support is restored, or piping and conduit to be removed shall be cut off and capped outside the limits of excavation.

PART 2 PRODUCTS

2.01 SHEET PILING

A. Sheet piling, wood or steel and all bracing, shoring or sheeting as required or necessary to conduct the work safely, retain the excavation, and prevent damage to existing structures, and to complete the work, shall be furnished and installed by the Contractor.

2.02 ON SITE MATERIALS

A. Existing excavated soil material from the site may be used for fill and backfill material within non-surfaced areas to be seeded 10'-0" beyond the building footprint, provided that this material contains no topsoil, peat, demolished material, trash, fine or coarse aggregate containing "slag" or components of "slag", deleterious, carbonaceous, coal, organic and/or latent materials, nor any substance that may break or cause damage or corrosive action to occur to utility pipes, etc., that may be trenched within these areas, is of an acceptable moisture content, will compact to 90% of maximum dry density per modified Proctor Test ASTM D1557, and is approved for such use by the Contractor's testing agency and the Project Engineer. Rocks/stones shall not be over 2" in size. No rocks/stones over 3/4" in size shall be in the top 12" of subgrade. Existing soils may need to be disked or harrowed, dried, re-compacted, or otherwise improved to meet the density and moisture content requirements for re-use. Should the existing excavated materials not meet the compaction and/or moisture content requirements, the Contractor shall furnish and install fill material as hereafter specified.

1. Existing excavated soil materials shall be tested for compliance with hereafter specifications to determine approval for reuse.
2. All costs for reconditioning existing soils to meet the density and moisture content requirements for re-use approval by the Contractor's testing agency and the Project Engineer shall be at the Contractor's expense.
3. Existing excavated soil materials approved for reuse by the Contractor's testing agency and the Project Engineer shall be maintained at optimum moisture content regardless of weather conditions; said material not maintained at optimum moisture content shall not be reused and Contractor shall provide off-site material as hereinafter specified per intended location.

B. Existing excavated topsoil may be re-used. Additional material for topsoil required in excess of acceptable material from excavations on the site, shall be provided by the Contractor from a source as approved by Architect and the Owner and comply with topsoil material as hereafter specified.

1. Existing topsoil shall be screened prior to reuse and must meet requirements for new topsoil as hereafter specified.
2. No rocks/stones of any size shall be in the topsoil.

C. Excess material from excavation not suitable nor required for backfill or other purposes shall be hauled from the site as excavated.

D. The General Contractor shall be responsible for complying with all laws, regulations and guidelines required to maintain an acceptable soil erosion control plan at all disturbed areas.

2.03 PIPE EMBEDMENT MATERIAL

A. Embedment material for drainage and/or storm sewer systems shall be as detailed on drawings and/or as specified in Section 334000.

2.04 EXTERIOR FILL MATERIAL

A. Material for filling and backfilling required to raise or change the exterior sub-grade to the required elevations shown on the drawings, shall be provided by the Contractor from a source as approved by Architect and the Owner.

1. All fill/backfill materials shall be tested, evaluated, and/or approved by the Contractor's testing agency in compliance with the following.
2. Submit samples of fill/backfill materials to the Contractor's testing agency and Project Engineer for analysis, to determine the adequacy of material, and to perform moisture density relationship tests.

B. Fill and Backfill Material within non-surfaced areas 10'-0" beyond exterior building walls and/or 3'-0" beyond surfaced areas: Shall be clean earth, containing no vegetable matter, rubbish or debris or other prohibitive materials as identified in Paragraph 2.02.A. All voids shall be thoroughly filled with earth of friable material and compacted as herein provided. Rock shall not be used in fill areas where utility or drainage lines are to be located. Material must compact to 90% of maximum dry density, at moisture content within 3% of optimum, per Modified Proctor Test ASTM D1557, unless otherwise specified.

C. Fill Material within site areas to be surfaced and 3'-0" beyond (10'-0" beyond any structure footprint): Shall be Penndot No. 2A Limestone according to Table C of PennDot Specification 408 Section 703 (Latest Edition), quality of materials shall meet requirements of Table B, Type A. No fine or coarse aggregate containing "slag" or components of "slag" shall be acceptable. Material must originate from a PennDot approved quarry; submit verification of quarry meeting PennDot approval. Material must compact to 95% of maximum dry density, at moisture content within 2% of optimum, per Modified Proctor Test ASTM D1557.

1. Above Penndot No. 2A Limestone shall be used for backfill material for trenches, etc., through surfaced areas)

2.05 INTERIOR/ENGINEERED/STRUCTURAL/CONTROLLED FILL MATERIAL

A. Interior/Engineered/Structural/Controlled Fill Material required within any structure footprint, beneath footings, and 10'-0" beyond exterior building walls, including backfilling of walls, trenches, ditches and all areas of disturbed earth shall be tested, evaluated, and approved by Contractors Testing Agency and Project Engineer in compliance with the following:

1. Penndot 2A Limestone according to Table C of Penndot Specification Publication 408 Section 703, quality of materials shall meet requirements of Table B, Type A.
   a. Material must originate from a PennDot approved quarry; submit verification of quarry meeting PennDot approval.
   b. Material shall contain no fine or coarse aggregate containing "slag" or components of "slag" or "quarry waste", or other prohibitive materials as identified in Paragraph 2.02.A.
   c. Material shall be placed at a moisture content within 2% of optimum and compacted to 95% of maximum dry density per Modified Proctor Test ASTM D1557.
2. Submit samples of fill material to the approved testing laboratory for a sieve analysis, to determine the adequacy of material, and to perform moisture density relationship tests. Submit test results and samples to the Architect/Project Engineer.

2.06 TOPSOIL

A. Topsoil: Shall be natural clay loam soil possessing the characteristics of representative soils in the vicinity which produce heavy growth of crops, grass and other vegetation and shall be obtained from naturally well-drained areas. Topsoil shall be without admixture of sub-soil, refuse or any foreign material, free from hard dirt, brush, weeds or clods, and from clay lumps, stumps, roots, stones, or toxic substance, and any other material or substance which may be harmful to plant growth or be a hindrance to planting and maintenance operations.

1. All topsoil shall be screened (new and/or existing).
2. No rocks/stones of any size shall be in the topsoil.
3. Submit samples of topsoil to the Architect for review.

2.07 AGGREGATE/STONE BASES AND/OR SURFACING

A. Aggregates - General:

1. All base material must originate from a PennDot approved quarry; submit verification of quarry meeting PennDot approval.
2. No fine or coarse aggregate containing “slag” or components of “slag” shall be acceptable.

B. Gravel Base for under site concrete slabs on grade: Shall be clean washed material AASHTO (American Association of State Highway and Transportation Officials) No. 57 according to Table C of Penndot Specification Publication 408 Section 703, quality of materials shall meet requirements of Table B, Type A.

C. Gravel Base for under interior concrete slabs on grade: Shall be clean washed, angular AASHTO No. 57 Limestone, according to Table C of Penndot Specification Publication 408 Section 703, quality of materials shall meet requirements of Table B, Type A.

D. Gravel/Stone for Rock Construction Entrance: As specified in Section 312500.

E. Gravel Surfacing/Pavement: Shall consist of layers as detailed on drawings, materials as follows:

1. Upper Layer: Clean washed, Penndot No. 2A Limestone, according to Table C of Penndot Specification Publication 408 Section 703, quality of materials shall meet requirements of Table B, Type A.
2. Base Layer: AASHTO #57 Limestone, according to PennDot Specification 408 Section 703. Install over geotextile fabric.
3. Geotextile Fabric for Paving Stone Aggregate Base: Shall be woven polypropylene geotextile meeting AASHTO M288-Latest Revision Specifications for Stabilization and Separation Class 1 and 2; weight – 6 oz/yd^2; thickness – 25 mils. Acceptable products: Tencate Mirafi 600X; U.S. Fabrics US315; or equal as approved by the Architect.

PART 3 EXECUTION

3.01 EXCAVATIONS

A. The Contractor shall be responsible for complying with all laws, regulations and guidelines required to maintain an acceptable soil erosion control plan at all disturbed areas.

1. Comply with Pennsylvania Department of Environmental Protection’s Erosion and Sediment

Pollution Control Program Manual and the PA Code Chapter 102, Erosion and Sediment Control.
2. Refer to Section 312500.

B. Make all necessary excavation on premises to bring the finished grades to the levels shown on drawings; or if not so shown, then to grade as directed by the Architect.

C. Excavations include removal of any old foundations, building construction, building materials, or tree stumps which may be concealed beneath the present grade.
1. Where indicated on drawings, the existing interior concrete slab on grade and subbase shall be removed and the existing subgrade shall be overexcavated to the depth as shown on Drawings. Prior to the overxcavation indicated within the building footprint, the Contractor shall proofroll the existing subgrade as specified in Paragraph 3.01.D. The Contractor's testing agency and Project Engineer shall evaluate the existing subgrade to determine whether any of the overexcavation of this area to be included in the Base Bid may be deleted. The Contractor's testing agency and Project Engineer shall determine any quantity/limits of existing subgrade that may remain; the Contract Price shall be adjusted by the unit price allowance submitted on the Bid Form Section 004116 for PennDot #2A Limestone. Proofrolls and all overexcavation shall be monitored by the Contractor's testing agency.
2. Extreme care shall be exercised during excavations/overexcavations within and around the existing structure and existing footing elevations. The Contractor shall execute work in a manner to ensure the existing building, designated to remain, against any damages resulting therefrom. The Contractor shall be responsible for repairing any damage to the existing building designated to remain, at the Contractor's expense.
3. Stabilization of existing adjacent foundations exposed during excavations shall be at the Contractor's expense.
4. Once a subgrade has been stabilized and approved by the Contractor's testing agency, any reworking of the approved surface recommended by the Contractor's testing agency shall be the responsibility of the Contractor. All exposed subgrades shall be protected and/or considered sacrificial if exposed for more than one day.

D. After designated areas have been stripped and excavated to grade, all initial Subgrade areas shall be evaluated by the Contractor's testing agency by observing proofrolling. Proofroll shall be performed with equipment and in a manner as approved by the Contractor's testing agency and Project Engineer for size of area to be proofrolled. Any material performing unsatisfactorily, or deflecting significantly and which cannot be redensified in-place by recompaction, shall be overexcavated an additional depth of 8", beyond any overexcavated depth indicated on drawings, aerated to achieve optimum moisture contents, and placed and compacted back into the overexcavation area, as approved by the Contractor's testing agency and Project Engineer, at the Contractor's expense.
1. The Project Engineer shall be notified 24 hours in advance of times of excavation/overexcavation in order to be present to verify, witness, and/or approve the Contractor's testing agency's evaluations. The Owner may also elect to employ a third-party Geotechnical Engineer to verify, witness, and/or approve the Contractor's testing agency's evaluations, as well as all overexcavation, and shall be permitted the time to have such verification performed.
2. The Contractor's testing agency must provide a subgrade evaluation report to the Architect/Engineer, prior to any undercutting of subgrade soils and any testing agency recommendations; as well as provide a report of assessment of subgrade corrective actions taken.
3. Significant drying (i.e., moisture condition, scarify/disc/fallow) may be required in order to bring on site soil within the moisture parameters required for the specified compaction. Drying time and

progress shall not impact the schedule of completion or add additional costs to the Owner. All reworked existing soils shall be proofrolled again.

4. If unstable and/or unsuitable soils perform unsatisfactorily during above proofrolls, as determined by the Contractor's testing agency and the Project Engineer, the area shall be stabilized as recommended by the Contractor's testing agency, which may require undercutting, in addition to overexcavation specified above, to maximum 8" depth. The Contractor's testing agency and the Project Engineer shall determine if undercutting is required, as well as quantity/limits of undercutting. The Contract Price shall be adjusted by the unit price allowance submitted on the Bid Form Section 004116 for PennDot #2A Limestone. Undercut materials shall be disposed of offsite at no additional cost to Owner.
5. Once a subgrade has been stabilized and approved by the Contractor's testing agency, any reworking of the approved surface recommended by the Contractor's testing agency shall be the responsibility of the Contractor. All exposed subgrades shall be protected and/or considered sacrificial if exposed for more than one day.

E. The bottom of all excavations shall be leveled off. All loose material within the construction area, which includes those portions below any excavations, shall be removed and the excavations shall be brought into approved condition to receive subsequent materials.

F. Bottoms of all footings (foundations) shall be at elevations shown on drawings, placed on undisturbed residual soils (stable subgrade) and/or compacted interior/engineered fill, after bearing capacity has been confirmed by the Contractor's testing agency.

1. The Contractor shall furnish adequate advance notification to the testing laboratory of times when footing excavations are to be completed so that the condition of bottoms may be reviewed and design bearing pressures verified before forms are constructed or concrete placed.
2. If condition of bottoms are not acceptable, including areas below the footing elevations, the Contractor's testing agency shall review the area with the Architect and determine whether the area needs stabilized. Should footing excavations require undercutting due to loose material, the area of undercutting shall extend downward and outward at a one to one slope to the depth of the suitable material; then backfilled with PennDot #2A Limestone, placed in horizontal lifts not exceeding 8" and compacted to 95% maximum dry density as determined by ASTM D1557, as approved by the Project Engineer and Contractor's testing agency. Undercutting, backfill, and compaction required to bring areas into an approved condition shall be performed at the Contractor's expense.
2. If, through an error, any part of the excavation is carried below the depth shown on drawings and/or required, the Contractor shall fill excavations to required elevations with PennDot #2A Limestone, placed in horizontal lifts not exceeding 8" and compacted to 95% maximum dry density as determined by ASTM D1557, as approved by the Project Engineer and Contractor's testing agency; all at the Contractor's expense.

G. Do not excavate to full depth when rain or freezing conditions are imminent and footings and/or subsequent materials cannot be placed during the same work period. Completed excavation surfaces shall be protected from frost, freezing, and/or rain/water. Where excavation surfaces are damaged by water, mud, or otherwise disturbed, all loose mud or other materials shall be removed and the excavations filled to required elevations with specified fill material, placed in horizontal lifts not exceeding 8" and compacted; backfill and compaction shall be as specified dependent on site location, all corrective work shall be at the Contractor's expense.

H. Excavated material shall be piled away from the edge of the excavated area, a sufficient distance to

prevent overloading the bank, and graded in such a way as to prevent surface water from entering the excavated area.

I. Material from excavation not suitable nor required for other purposes shall be hauled from the site as excavated.

J. During excavation, rough grading and construction, the areas shall be kept well shaped and drained at all times. Existing springs or drainage courses encountered shall be temporarily blocked off or diverted in order to carry out the work. The contractor shall be responsible for establishing acceptable erosion control measures during excavation, grading and construction operations to avoid excessive erosion.

K. Place all subsequent materials the same day excavations are made to prevent degradation of exposed subgrade soils.

L. Every effort shall be made to keep the excavations dry.

3.02 PUMPING

A. Remove all water, including rainwater or sub-surface water encountered during the course of the excavation. Removal shall be by the use of sumps and pumps, drains, and other approved methods, and shall keep the excavation free from water until the construction is completed and the backfilling is finished. The water shall be discharged to catch basins, sewers or other drainage points available, via approved storm water piping and erosion and sedimentation control methods. All dewatering costs are to be included in the Base Bid. Pumps shall be of capacity required to continually lower amount of water encountered.

3.03 EXTERIOR WALL TREATMENT

A. Apply parging, perimeter insulation, and/or other materials specified in related sections as specified therein. Protect all materials from damage during backfilling operations. Replace all damaged materials.

3.04 BACKFILLING TRENCHES

A. Storm sewer piping trenches shall be excavated to 4" below required line and grade, as specified in Section 334000. Refer to Paragraph 3.01.E for acceptable condition of bottom of trenches.

B. Install pipe in bedding material.

C. Prior to any backfill, the Architect, Owner and local inspector (when required) shall be notified to inspect installed work 24 hours prior to required inspections.

D. After pipe is installed, inspected and approved, backfill with bedding material in lifts, not to exceed 6", to a minimum of 12" above the top of the pipe as specified in Section 334000, backfill remainder of trench with material herein specified, dependent upon site location of trench, to level of finish grade or to elevations required for installation of additional work: floor slabs, finish grading, paving, sidewalks, etc. Placing and compaction of fill material shall be performed for specific locations as specified in subsequent Paragraphs; except lifts shall not exceed 6" in thickness.

E. In no case shall underground utilities pass under foundations, unless approved by the Architect. Upon approval by the Architect, Piping running beneath footings shall be thoroughly encased in concrete for

entire area disturbed.

1. All underground utilities passing through foundations shall be through galvanized pipe sleeves.

3.05 EXTERIOR FILLING, BACKFILLING AND ROUGH GRADING - NON-SURFACED AREAS.

A. Clean excavation and areas to be filled and rough graded of all topsoil, vegetable matter, pieces of wood, refuse and debris before placing any fill and backfill. Do not backfill excavations against walls until all work as detailed is completed, protected and approved.

B. Do not fill or backfill over frozen sub-grade nor use any frozen material in fill or backfill.

C. Prior to new fill placement, the existing subgrade shall be proofrolled by the Contractor; initial excavations and proofrolling shall be evaluated by the Contractor's testing agency and proofroll evaluations shall be submitted by the Contractor's testing agency as stated in Paragraph 3.01.D.

D. No backfilling shall be performed around any parts of the structures until such parts have been reviewed by the Owner's Representative. Perform filling and backfilling carefully and brace as required, so as not to damage other work or affect the stability of any construction. No backfilling against foundations, walls, footings or areaways shall be performed until concrete forms have been removed and the concrete is thoroughly cured. Perform filling only when walls are fully capable of withstanding the resulting pressure.

E. Filling and backfilling on exterior of the building to a minimum point 10'-0" outside of building lines (depending on elevation of sub-grade to footing level) or within a dimension encompassed by a 45° line drawn from footing level to working surface, shall be performed as specified in Paragraph 3.07.

F. Filling/backfilling more than 10'-0" outside of building lines shall be installed in 8" lifts uniformly spread and compacted and rolled and then leveled or sloped as required. No puddling will be allowed. Compact each lift to such a degree that in-place density of compacted fill shall be 90% of the maximum dry density, as per modified Proctor Test ASTM D1557, and 3% of optimum moisture content. Rough grade the lawn areas to a level 4" below the finished grades shown on the drawings.

1. On site in place density tests will be performed by the approved testing laboratory on each compacted lift. The Contractor shall notify the testing laboratory when each lift is compacted and ready for testing.
2. No rocks/stones over 3/4" in size shall be in the top 12" of subgrade.

G. Significant drying may be required in order to bring on site soil within the moisture parameters required for the specified compaction. Drying time and progress shall not impact the schedule of completion or add additional costs to the Owner.

3.06 EXTERIOR FILLING AND GRADING - SURFACED AREAS

A. "Surfaced Areas" include all gravel surfacing, pavements, and concrete stairs, pads, walks, and/or curbs.

B. Compaction, as hereinafter specified, for under surfaced areas shall extend a minimum of 3'-0 beyond the edge of surfaced area.

C. Clean all areas to be surfaced of all topsoil, vegetable matter, refuse and debris before filling or rough grading.

D. Prior to new fill placement and/or placement of surfacing subbase, the existing subgrade shall be proofrolled by the Contractor; initial excavations and proofrolling shall be evaluated by the Contractor's testing agency as stated in Paragraph 3.01.D.

1. Note: Proofroll equipment to be utilized against the existing building shall be hand type equipment as approved by the testing agency and Project Engineer.

E. All required fill shall be installed in maximum of 8" lifts. Each lift shall be compacted as hereafter specified. Do not fill over frozen sub-grade nor use any frozen material in the fill. On site in place density tests will be performed by the approved testing laboratory on each compacted lift. The Contractor shall notify the testing laboratory when each lift is compacted and ready for testing.

F. Areas to be surfaced shall be graded to the depth required for the placing of surfacing material. All sub-grades shall closely parallel the finish grades set on the drawings, shall drain freely and shall be without low spots which hold water.

G. After the sub-grade has been shaped to the line, grade and cross section, it shall be thoroughly compacted by power rollers. A final subgrade proofroll shall be performed by the Contractor and evaluated by the Contractor's testing agency; all soft and unstable materials that will not compact shall be removed and replaced with specified material. Any low spots that develop during the rolling shall be brought to grade with additional material and rolled. Any spots inaccessible to the roller shall be thoroughly compacted with mechanical tampers in a manner and to a degree satisfactory to the testing laboratory. Correct all surface irregularities exceeding 1/2" in ten feet by loosening the surface and removing or adding material as required. Compact the corrected areas and surrounding surface by rolling. All corrective work shall be at the Contractor's expense.

1. Note: Compaction equipment to be utilized against existing construction to remain shall be hand type equipment as approved by the Contractor's testing agency and Project Engineer.

H. Sub-grade for walk/slabs/etc. shall be compacted with a three (3) to five (5) ton roller.

I. Sub-grade for drives, parking areas, etc., shall be compacted with power rollers complying with the following:

1. Three-wheel power rollers, with an unballasted load of not less than 300 pounds per linear inch of tread of rear wheels, having a manufacturer's certified metal weight of not less than 10 tons.
2. Tandem power-drive rollers, with a ballasted load of not less than 300 pounds per linear inch of tread of drive roll, having a manufacturer's certified metal weight of not less than 10 tons.
3. Pneumatic-tire rollers may be either single or multiple-axle type and may be equipped with pneumatic tires of equal size and diameter on any one axle. Uniformly inflate tires so that air pressure does not vary more than 5 pounds per square inch. Use rollers of sufficient weight and dimensions that, when loaded, will cause the pneumatic tire wheels to exert a ground pressure of not less than 300 pounds per inch of width of tread, as measured on a hard surface.

J. Density requirements:

1. Compact the final subgrade to not less than 95% of the determined dry-weight density as per Modified Proctor Test ASTM D1557. When material is too coarse (more than 20% retained on the 3/4" sieve) to use these methods, compaction will be determined based on nonmovement of materials under compaction equipment specified above.
2. At the time of compaction, maintain the subgrade material's moisture content not more than 2 percentage points above optimum moisture for that material. However, on subgrades displaying

pronounced elasticity or deformation under rolling, maintain a moisture content not greater than optimum at the time of compaction or at the time of placing the overlaying construction. When the specified stability cannot be obtained, excavate material in the area to a depth that, when replaced and recompacted at a moisture content not exceeding optimum, the sub-grade will have required stability.

3. Significant drying may be required in order to bring on site soil within the moisture parameters required for the specified compaction.

K. Hauling or moving of equipment shall not be allowed over the finished sub-grade.

3.07 INTERIOR FILLING AND BACKFILLING

A. All rough graded areas of the building and 10'-0" beyond limits of footings shall be proof rolled with equipment as approved by the Project Engineer and testing agency, prior to the placing of engineered/structural/controlled fill or underfloor gravel base. The Contractor's testing laboratory shall observe the proof roll and provide a subgrade evaluation report indicating subgrade acceptance as stated in Paragraphs 3.01.C and 3.01.D. Any spots inaccessible to the roller shall be thoroughly compacted with mechanical tampers in a manner and to a degree satisfactory to the testing laboratory.

1. Extreme care shall be exercised during compaction around the existing structure and existing footing elevations.

B. The engineered/controlled fill shall be placed in horizontal lifts not exceeding 8" in thickness. Each lift shall be thoroughly compacted with vibrating rollers or other mechanical compactors as approved by the testing laboratory. Each 8" lift of controlled fill at moisture content within 2% of optimum shall be compacted to 95% of the maximum dry unit weight obtained by the Modified Proctor Test ASTM D1557. On site in place density tests will be performed by the approved testing laboratory on each compacted lift. The Contractor shall notify the testing laboratory when each lift is compacted and ready for testing.

1. Note: compaction equipment to be utilized against the existing building shall be hand type equipment as approved by the testing agency and Project Engineer.
2. Rough grading tolerance on areas to receive slab on grades shall be 1/4" per foot vertical in any 10' -0 horizontal distance.

C. No backfilling shall be performed around any parts of the structures until such parts have been reviewed by the Owner's Representative. Perform filling and backfilling carefully and brace as required, so as not to damage other work or affect the stability of any construction. No backfilling against foundation walls/footings shall be performed until concrete forms have been removed and the concrete is thoroughly cured. Perform filling only when footings/foundation walls are fully capable of withstanding the resulting pressure.

3.08 AGGREGATE BASES

A. All subgrades shall be evaluated and acceptable to the Contractor's testing agency before placing of gravel will be permitted, as previously specified.

B. All aggregate bases for concrete slabs and/or surfacing as herein specified shall be compacted to 100% of maximum dry density, at moisture content within 2% of optimum, per Modified Proctor Test ASTM D1557.

1. Install a minimum depth of gravel as detailed under all concrete slabs on grade. Also see Section 033000.

3.09 GRAVEL SURFACING/PAVEMENT

A. Prior to placement of gravel surfacing, the existing subgrade shall be proofrolled/compacted by the Contractor; initial excavations and compaction shall be evaluated as specified in Paragraph 3.01.D. Compaction shall be performed with equipment as reviewed with the Contractor's testing agency and Project Engineer, equipment may include, but not be limited to, a fully loaded dump truck weighing at least 20 tons or similar equipment, at a minimum of two (2) passes.

B. Place geotextile stabilization fabric over prepared sub-grade. The fabric at the overlap shall be either lapped a minimum of 3' or sewn or glued. If lapped, the fabric shall be placed so that the preceding roll overlaps the following roll in the direction the fill material is being spread. If sewn or glued, the seam strength shall not be less than 90 percent of the required tensile strength of the unaged fabric. Should the fabric be damaged during construction, the torn or punctured section shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement.

C. Gravel Surfacing/Pavement shall consist of layers as detailed on drawings. Each layer shall be placed and compacted to 100% of maximum dry density, at moisture content within 2% of optimum, per Modified Proctor Test ASTM D1557. Total thickness of aggregate base material, as shown on drawings, shall be a minimum thickness after compaction.

D. Should the sub-grade at any time become churned up with the aggregate base material, the Contractor, without additional compensation, shall remove the mixture from the affected portion, reshape and compact the sub-grade and replace the removed materials with clean aggregate as specified, which shall then be rolled and filled until an aggregate base satisfactory to the Architect has been constructed.

3.10 FINISH GRADING

A. Topsoil stripped from site and stockpiled, shall be used for topsoil requirements. If additional topsoil is required, it shall meet the requirements specified and shall be supplied by the contractor and shall be included in the contract. If there is an excess of topsoil, it shall be disposed of as directed by Architect. As specified in Paragraph 2.06, all topsoil shall be screened (new and/or existing).

B. Before placement of any topsoil, the finished sub-grade shall be scarified to a depth of 4" by discing or harrowing. All erosion gullies or depressions shall be filled with sub-grade material to produce a uniform base for topsoil. Sub-grade shall be subject to inspection by the Architect before topsoil is placed.

C. Placing and Spreading Topsoil: Place topsoil on the prepared areas and, unless otherwise indicated, spread and compact to a 4" uniform depth $\pm$ 1". Compact with a roller, one weighing not over 120 pounds per foot width of roller, or by other acceptable methods, as directed. Do not place topsoil in a wet or frozen condition.

3.11 DEFECTIVE MATERIAL AND/OR WORKMANSHIP

A. Earthwork which is not properly performed, or which fails to meet specified in place density tests, shows poor workmanship, or contains foreign substances or materials, shall be deemed to be defective and the Contractor shall remove this work from the site as directed by the Contractor's testing agency, replacing same with new materials complying with the contract specifications and meeting the approval of the testing laboratory.

B. The Contractor shall pay all costs of correcting rejected work, including all additional testing costs as well as the Architect's additional services thereby made necessary.

3.12 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.13 CLEAN-UP

A. Any paved area over which hauling operations or other moving equipment are conducted shall be kept clean and any soil or other material which may be brought upon the paved surfaces shall be removed promptly by the Contractor. Upon completion of rough grading, clear away all debris and remove from site.

END OF SECTION 312000

SECTION 312500 - EROSION & SEDIMENTATION CONTROLS

PART 1 GENERAL

1.01 SCOPE

A. The work covered by this section consists of furnishing all labor, equipment and appliances necessary to perform all necessary erosion and sedimentation pollution control measures required for the project site in strict accordance with this section of the specifications and drawings.

B. Contractor shall maintain a plan for soil erosion control acceptable to the Pennsylvania Department of Environmental Protection and local Conservation District on Project Site at all times and shall be responsible for complying with all laws, regulations and guidelines of the Department.

1.02 RELATED WORK IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Earth Moving - Section 312000.

C. Grasses - Section 329200.

D. Storm Drainage Utilities - Section 334000.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

1.04 QUALITY ASSURANCE

A. The General Contractor shall be fully responsible for the implementation and maintenance of all erosion and sedimentation control measures as shown on drawings and as specified herein, as well as, all monitoring, inspecting, reporting, etc., associated with the maintenance of erosion and sedimentation control measures.

1. Monitoring, Inspection, and Reporting Requirements: Contractor shall ensure that visual site inspections are conducted weekly, and within 24 hours after each measurable rainfall event throughout the duration of construction. The visual site inspections and reports shall be conducted by qualified personnel, trained and experienced in erosion and sediment control to ascertain that erosion and sediment best management practices (BMPs) are properly constructed and maintained. Written reports of each inspection shall include at a minimum -
    a. Summary of site conditions, implementation and maintenance and compliance actions.
    b. Date, time, name and signature of person conducting inspection.
2. Temporary E & S measures shall not be removed until site stability has been achieved and been approved by the Project Engineer.

B. A Pre-Installation Conference shall be held at the job site prior to any erosion and sedimentation control measures and/or earthwork on-site (as specified in Section 312000).

1. The Project Architect, the Contractor, and his earthwork subcontractor, shall attend the Pre-Installation Conference along with the building Owner's Representative.

PART 2 PRODUCTS

2.01 MATERIALS

A. Temporary Sediment Control Devices shall be as required by the site excavation work, and may include any of the following materials:

1. Compost Filter Socks: Tubular mesh sleeves (polypropylene or polyester) filled with compost (blend of wood chips or other organic materials). 100% Biodegradable. Refer to drawings for sizes/types/locations. Products shall meet standards of PA DEP E & S Pollution Control Program Manual (PA DEP ECM) Tables 4.1 and 4.2. Acceptable products include, but are not limited to, the following:
   a. BioSock™ Compost Filter Socks by EnviroTech BioSolutions, Honolulu, HI.
   b. Filtrexx™ Silt Soxx™ by Filtrexx International, LLC, Grafton, OH, www.filtrexx.com.
2. Soil Erosion Matting: See Section 329200.
3. Temporary Seed: PennDot Type “E”, 100% annual rye grass, 98% Pure Live Seed required.
4. Mulch and Straw Bales: See Section 329200.
5. Inlet Silt Sacks, Inlet Filter Socks, Concrete Washouts, Sediment Bags, Rock Filter Outlets, and/or Trench Plugs.

B. Rock for Construction Entrance (RCE): Shall be clean washed material AASHTO (American Association of State Highway and Transportation Officials) No. 1. No fine or coarse aggregate containing “slag” or components of “slag” shall be acceptable.

C. Geotextile (Subgrade) Stabilization Fabric for RCE: Shall be AASHTO M288-05 Class 3 (Stabilization and/or Separation). Tencate Mirafi 500X as manufactured by Tencate Geosynthetics, Pendergrass, North Carolina; Geotex 200ST as manufactured by Propex Geosynthetics, Chattanooga, TN; and US200 as manufactured by US Fabrics, Cincinnati, OH; are approved products. Tencate Mirafi 500X is a woven geotextile product comprised of UV stabilized polypropylene slit film, providing excellent puncture and tear resistant properties in addition to high tensile strengths, meeting AASHTO M288-05 Specifications for Stabilization and Separation - Class 3.

D. Temporary Safety/Construction Fence: As specified in Section 015000.

PART 3 EXECUTION

3.01 PRECAUTIONS

A. Refer to Sections 015000 and 024200 before starting work, including but not limited to, site security and/or protection fencing.

B. Refer to drawings for erosion and sedimentation control sequencing notes.

3.02 ROCK CONSTRUCTION ENTRANCE

A. Contractor shall construct and maintain the rock construction entrance as indicated on the drawings. Rock shall be installed on geotextile fabric as specified.

B. Contractor shall remove the construction entrance when it is no longer required to perform the site work on the Project and finish grade said area and install seed/groundcover and/or surfacing as may be indicated on drawings.

3.03 SOIL EROSION CONTROL

A. Install silt filter socks, rock filters, trench plugs, inlet protection, concrete washouts, etc., as detailed on drawings, as recommended by the manufacturer, and/or as required by nature of the work.

B. Temporary mulching and seeding is required where disturbed earth will be left exposed for more than 20 days.

C. The stock piled topsoil as well as all areas of the project where topsoil is removed, shall be seeded to control erosion of the earth.

D. Seed shall be applied at minimum rate of 48 pounds/acre with a Brillion seeder.

E. Mulch shall be applied as specified in Section 329200.

F. Soil erosion matting shall be installed in all locations as required to maintain soil to established grades until grass becomes established as specified in Section 329200.

G. Comply with Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Program Manual Chapter 102, Rules and Regulations.

3.04 DEBRIS

A. Re-utilize sediment in compliance with Pennsylvania Department of Environmental Protection's Erosion and Sediment Pollution Control Program.

END OF SECTION 312500

SECTION 329200 - GRASSES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the grass (lawn seeding) work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. All lawn areas disturbed by construction activities shall be repaired as described herein.

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Earth Moving - Section 312000.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Test Reports: Submit certified laboratory test reports as necessary to show compliance with specified requirements.

C. Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight and percentages of purity, germination, and weed seed for each grass seed species.

1.04 PROTECTION

A. Materials: All materials shall be protected from the weather and shall not be stored in direct contact with the ground.

1.05 PERMANENT PLANTING SEASON

A. Planting periods shall be restricted in the Spring between March 15 and June 1, and in the Fall between August 1 and October 15, except if special instructions to the contrary are issued by the Architect.

1.06 QUALITY ASSURANCE

A. A Pre-Installation Conference shall be held at the job site prior to finish grading and the placement of topsoil (Section 312000) and subsequent seeding as herein specified. The purpose of this meeting shall include, but not be limited to, an evaluation of topsoil samples, soil and seed amendments, seed mixes, and protection procedures. The Project Architect, Contractor, and his landscaping/seeding subcontractor shall attend the Pre-Installation Conference along with the building Owner's Representative.

PART 2 PRODUCTS

2.01 MATERIALS

A. Fertilizer: Commercial fertilizer conforming to requirements of Pennsylvania Soil Conditioner and Plant Growth Substance Law, Act of December 1, 1977, P.L. 258, No. 86 (3P.S.68.2), as amended.

1. Dry formulation of Ten (10) percent nitrogen, twenty (20) percent available phosphoric acid and twenty (20) percent potash for seeded areas.

B. Lime (pulverized agricultural limestone): Shall have a calcium carbonate equivalent of 89 percent; 95 percent shall pass a No. 20 sieve, 60 percent shall pass a No. 60 sieve, and 50 percent shall pass a No. 100 sieve; conforming to requirements of Agricultural Liming Materials Act of 1978, P.L. 15, No. 9, as amended.

C. Grass seed shall be fresh, clean, new crop seed. Seed may be mixed by approved method on the site or may be mixed by the dealer. If the seed is mixed on the site each variety shall be delivered in the original containers, which shall bear the dealer's guaranteed analysis. If the seed is mixed by the dealer, the contractor shall furnish the Architect the dealer's guaranteed statement of the composition of the mixture and the percentages of purity and germination of each variety at a given date which shall not be more than 90 days prior to date of use.

1. Permanent Seed Mix: PennDot Type 'B'
   Kentucky Bluegrass 53 pounds/acre
   Creeping Red Fescue 29 pounds/acre
   Perennial Ryegrass 20 pounds/acre
2. All mixes shall be 98% Pure Live Seed required, no noxious weeds permitted. Test shall be no older than 30 days.
3. Provide seed complying with tolerance for purity and germination established by Official Seed Analysts of North America.

D. Mulch shall be wheat or oats straw. It shall be free from mature seed bearing stalks or roots of prohibited or noxious weeds as defined in the Pennsylvania Seed Act of 1947.

E. Erosion Control Blankets (aka ECB's, ECM's, Soil Erosion Matting; Rolled Erosion Control Products – RECP's): Shall be SC150BN Double Net Straw Blanket as manufactured by North American Green, or equivalent.

F. Hydroseed Mixture: At the Contractor's option, seed, fertilizer, hydro-mulch, tackifier, and water may be combined into a greenish mixture for a one step application.

1. Seed: As specified above.
2. Fertilizer: As specified above, preferably in a granular state.
3. Lime: If soil PH tests require the application of lime, provide liquid lime product such as New Cal.
4. Tackifier: Used to aid in holding hydroseed mixture in place on hillsides.
5. Mulch: Cellulose fiber mulch made from recycled newsprint is preferred product. Also acceptable are wood fiber mulch or combination of paper and wood fiber mulch.

G. Water: The Contractor shall make whatever arrangements may be necessary to insure adequate supply of potable water to meet the needs of this contract.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine the areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until satisfactory conditions are corrected.

3.02 PRECAUTIONS

A. Sidewalks, roads and other paving adjacent to the seed operation shall be kept clean and free of obstructions, mud and debris at all times.

B. Flushing of streets and disposal of dirt or debris into sewers shall not be permitted.

C. Dust shall be controlled by approved means to the satisfaction of the Architect.

3.03 METHODS

A. The top surface of all areas to be seeded shall be thoroughly loosened to a depth of at least 4" by discing or harrowing. All topsoil shall then be screened to remove all roots, coarse materials and stone, in the entire 4" thickness of topsoil. Any ruts or damaged areas resulting from erosion, hauling or other cause shall be repaired by filling with topsoil. Dress areas to even surface conforming to established grades.

B. Lime shall be spread evenly over the surface of all areas to be seeded at the rate necessary to obtain a pH value between 6 and 7, generally at a rate of 4.0 - 6.0 ton/acre. Contractor shall perform soil testing to determine rate.

C. Fertilizer shall be distributed uniformly over all areas to be seeded under this contract at the rate 900 – 1000 pounds/acre.

D. Fertilizer and lime shall be incorporated into the soil to a depth of at least 4" by discing, harrowing or other acceptable method.

E. After all topsoil has been limed and fertilized, topsoil shall be smoothed with a drag or smoothing harrow to prepare the surface to receive seeding.

F. Seed shall be applied with a Brillion seeder calibrated to apply at rates as follows:
   1. Permanent Seeding - 102+ pounds/acre.
   2. Areas inaccessible by machine seeders shall be hand seeded at corresponding rates.
   3. Note: Seed rate is listed as lbs/acre of Pure Live Seed (PLS). Actual seeding rate shall be determined by dividing PLS rate by the %PLS shown on each seed tag of each seed species.

G. Seeded areas shall have half the seed sown at right angles to the direction of the first sowing. Areas seeded shall have the seed raked into a depth of 1/16 of an inch and then the areas shall be lightly rolled, and watered with a fine spray.

H. Proceed with mulching as specified below.

I. At the Contractor's option, seeding may be applied by a hydroseeding system in lieu of methods specified above. Hydroseeding shall be performed by Turbo Turf Hydro Seeding equipment or similar device combining application of seed, fertilizer, hydro-mulch, tackifier, and water in one step. Application of specified straw mulch is eliminated with this process. Application rate of seed and fertilizer shall be as specified above. Application rate of tackifier, hydro-mulch, and water shall be as recommended by spraying system equipment manufacturer.

3.04 MULCHING

A. Mulch shall be applied at the rate of 3 ton/acre (or 1200 lbs/1000 SY) a maximum of 48 hours after seeding and anchored immediately, unless otherwise schedule on drawings. Tractor drawn implement to "crimp" mulch into soil is not permitted on slopes greater than or equal to 3 to 1. Machines that cut mulch into short pieces will not be permitted.

B. Install Erosion Control Blankets over all slopes greater than or equal to 3 to 1 and wherever ponded water may occur, such as swales, channels, lowest area of retention ponds, etc. Blankets shall be installed according to manufacturer's installations and recommendations.

C. Keep seeded and mulched areas undisturbed until a satisfactory stand of grass has been established.

3.05 PROTECTION

A. The contractor shall surround all newly seeded areas with neat temporary stakes connected by cord or wire on which signs shall be hung warning people to "keep off new seeding". These temporary barriers and signs shall be maintained in good order by the contractor until his work has been finally accepted and shall then be removed unless otherwise directed by the Architect.

3.06 WATERING

A. Lawn areas shall be kept wet to a depth of 3" for ten (10) days immediately following the seeding and thereafter as may be necessary during the maintenance period.

3.07 ACCEPTANCE OF SEEDING WORK

A. The Architect and Owner will accept the seeding work when a satisfactory stand of grass has been produced over the area of work. A satisfactory stand of grass shall be a close weed free stand of grasses specified of good color and vigor.

B. It is understood that acceptance of lawn areas as mentioned herein will not relieve the Contractor of responsibility for correction of defects in this phase of the work which may become evident during the effective period of the One-Year Maintenance Bond.

3.08 RESEEDING

A. All areas of lawn which do not show a prompt catch shall be reseeded and this operation shall continue during the one year period of the maintenance bond. Reseeding shall include the repair of washouts, settlements and replacement of topsoil before reseeding.

END OF SECTION 329200

SECTION 334000 - STORM DRAINAGE UTILITIES

PART 1 GENERAL

1.01 SCOPE

A. This section of specifications includes all labor, supervision, equipment, tools, materials and all other means of construction necessary to perform the site storm drainage utility work as shown on drawings, described in this specification, or as is necessary to complete the work in a first-class manner.

B. Work includes, but is not necessarily limited to the following:
1. Storm Water Piping
2. Trench Drains
3. Area Drains
4. Cleanouts
5. Downspout Boot Adapters

1.02 RELATED WORK INCLUDED IN OTHER SECTIONS OR CONTRACTS

A. Documents affecting work of this Section include but are not necessarily limited to: All Sections in Divisions 00, 01, and 02 of these Specifications.

B. Cast-In-Place Concrete - Section 033000.

C. Earth Moving - Section 312000.

D. Building Storm Sewers by Plumbing Contractor.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.

B. Shop Drawings: Shop drawings shall meet requirements of applicable portions of General Conditions. Shop drawings shall show gages, profiles, sections of materials, details of construction, methods of attachment and/or anchoring, all as applicable for specified materials.

C. Upon completion of storm system work, including site work as specified in Section 312000, submit as-built site plan/storm water drawings, complete with elevations certified by the Contractor’s Registered Engineer/Surveyor.

1.04 REFERENCES

A. American Association of State Highway and Transportation Officials - AASHTO.
1. AASHTO M252: Specification for Corrugated Polyethylene Drainage Tubing, 3 to 10 inch diameter.
2. AASHTO M294 Type S: Specification for Corrugated Polyethylene Pipe, 12 to 36 inch diameter.
3. Others as listed hereafter.

B. American Society for Testing and Materials - ASTM.
1. ASTM D1056: Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
2. ASTM D1248: Specification for Polyethylene Plastics Molding and Extrusion Materials.
3. ASTM D3350: Standard Specification for Polyethylene Plastics Pipe and Fitting Materials.
4. ASTM D2321: Standard Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
5. Others as listed hereafter.

1.05 QUALITY ASSURANCE

A. The General Contractor shall provide the appropriate licensed trade to perform utility work as detailed on drawings and as herein specified to comply with all county and municipal codes.

B. The General Contractor shall have a Registered Engineer/Surveyor establish all storm system locations, elevations, dimensions, sizes, and elements for the Project as specified in Section 312000. The as-built site plan, complete with contours and elevations certified and sealed by the Registered Engineer/Surveyor, shall be submitted prior to final payment.

C. A Pre-Installation Conference shall be held at the job site prior to any storm system work and/or earthwork on-site, as specified in Section 312000. All Prime Contractors and their earthwork subcontractors, as well as site storm system subcontractors shall attend the Pre-Installation Conference along with the Architect and Owner's Representative.

PART 2 PRODUCTS

2.01 MATERIALS

A. Trench Drain: Shall be KlassikDrain KS100 as manufactured by ACO Polymer Products, Inc., Chardon, OH. Drain shall be interlocking, polyester polymer concrete trench body (with built-in 0.5% pre-slope) complete with Type 304 stainless steel edge rails and perforated stainless steel ADA approved grate DrainLok. Provide closing end caps where required for complete installation. Like products manufactured by Polymer Concrete Research, Inc., Fargo, ND; and ABT, Inc. (Polydrain, Trench Former), are approved for bidding.

B. Exterior HDPE Storm Water Pipe: Shall be double wall, high density polyethylene (HDPE) pipe, corrugated exterior, smooth lined interior. Size(s) as shown on drawings.
1. Solid Piping shall be Water-tight Piping: Acceptable products/manufacturers: Hancor Blue Seal WT IB as manufactured by Hancor, Inc., Findlay, OH; Type S with LokTite Bell Coupler and Water-tight gasket as manufactured by Lane Enterprises, Inc., a Lane Metal Products Division; or ADS N-12 with ADS N-12 WT IB and/or ADS ProLink Ultra as manufactured by Advanced Drainage Systems, Inc., Columbus, OH. All Joints and Fittings shall meet the watertight joint performance requirements of ASTM F3219 or ASTM D3212.
2. Pipe and fittings shall be made of polyethylene (PE) compounds which conform with the requirements of cell class 324420C (min.) as defined and described in ASTM D3350, except that the carbon black content shall not exceed 5%. Pipe and fittings shall conform to AASHTO M252/ M294 requirements.
3. The pipe and fittings shall be free of foreign inclusions and visible defects. Fittings may be either molded or fabricated. Fittings supplied by manufacturers other than the supplier of the pipe shall

not be permitted without the approval of the project engineer. The ends of the pipe shall be cut squarely and cleanly so as not to adversely affect joining.

4. Provide all couplers, fittings, and/or other accessories as required. All joints shall be provided with bell and spigot configurations that include a gasket with material conforming to ASTM F477.

C. Cleanouts: Shall be No. ZN-1400 HD Dura-Coated Cast Iron (DCCI) Cleanout with round, heavy duty, polished nickel bronze scoriated, non-tilt top complete with vandalproof screw as manufactured by Zurn Industries, Inc., Erie, PA. Similar products as manufactured by Josam Company; Watts Industries, Inc.; and/or Wade are acceptable.

D. Area Drains - Round Drain Basins with Square Grates: Shall be drain basins as manufactured by Nyloplast ADS Inline Drains, sized as detailed. All grates shall be H20 rated, cast iron with protective mat on PVC and/or HDPE body with all required elbows, tees, risers, and watertight adaptors.

E. PVC Downspout Boot Adapters: Shall be assembled with the following:

1. Adapter: PVC IPS Centered Downspout Adapter (size as required, i.e., 4" x 6" x 6" and 3" x 4" x 4") by Drainage Solutions, Inc., fabricated to fit over 4" or 6" Schedule 40 DWV pipe as required by location.
2. Cleanout with Plug: Model #P445X-060 by Spears, 6" PVC DWV Flush Cleanout Tee with Cleanout Plug for 6" pipe; similar Model for 4" pipe.
3. Pipe Neck: Schedule 40 PVC pipe, meeting ASTM D1784, applicable for drainage, water, and/or vent piping. Provide all couplers, fittings, and/or other accessories as required.
   a. Additional acceptable dissimilar pipe coupling: Mar Mac Dissimilar Pipe Coupling, fabricated of rubberized mastic laminated to reinforcing mesh with high strength steel straps.
4. Prepare and paint all exposed surfaces as specified in Section 099000.

PART 3 EXECUTION

3.01 TRENCH EXCAVATION

A. Trench area for storm system shall be as detailed and as specified in Section 312000. Trench surfaces shall be reasonably smooth and free of rocks or sharp objects.

B. In no case shall underground utilities pass under foundations, unless approved by the Architect. Upon approval by the Architect, excavation or trenching occurring under wall foundations shall be backfilled up to the level of the foundation with concrete as specified in Section 033000.

3.02 LAYING PIPE IN TRENCHES

A. All sewers carefully graded to inverts shown or required.

B. Maintain no less than three batter boards or their equivalent during pipe laying operations, or use laser alignment instruments.

C. Provide bedding material as specified and detailed on the drawings. Place material in a manner to avoid segregation, and compact to assure no movement.

D. Lower pipe into trench using handling equipment designed for the purpose to assure safety of personnel and to avoid damage to pipe. Do not drop pipe.

E. Lay pipe proceeding up-grade with the bell or groove point upstream.

F. Lay pipe to a true uniform line with the barrel of the pipe resting solidly in bedding material throughout its length. Excavate recesses in bedding material to accommodate joints, fittings and appurtenances. Do not subject pipe to a blow or shock to achieve solid bedding or grade.

G. Lay each section of pipe in such a manner as to form a close concentric joint with the adjoining section and to avoid offsets in the flow line.

H. Clean and inspect each pipe and fitting before joining. Assemble to provide tight, flexible joints that permit movement caused by expansion, contraction, and ground movement. Use lubricant recommended by the pipe manufacturer for making joints.

I. Push-on Joints: Assemble in accordance with the recommendations of the pipe manufacturer. On field cut pipe, file or grind the spigot to resemble the pipe as manufactured so that the spigot end will slip into the socket intact without hindrance or causing gasket damage. Install spigot end to full depth of socket.

J. Check each pipe installed as to line and grade in place. Correct deviation from grade immediately. A deviation from the designed grade as shown on the Contract Drawings, or deflection of pipe joints, will be cause for rejection.

K. Clean the interior of the pipe as the work progresses. Where cleaning after laying is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull forward past each joint immediately after the jointing has been completed.

L. Keep trenches and excavations free of water during the construction.

M. When the work is not in progress, and at the end of each work day, securely plug open ends of pipes and fittings to prevent trench water, earth or other substances from entering the pipe or fittings.

N. Test lines before backfilling to assure free flow. Remove obstructions, replace damaged components and retest until satisfactory.

O. Place sufficient bedding material backfill on each section of pipe, as it is laid, to hold firmly in place. Backfill with bedding material to a minimum of 12" above the top of the pipe, unless detailed otherwise, and compact to assure no movement. Backfill and compaction for remainder of trench shall be as specified in Section 312000.

P. Check exact location and invert elevation prior to connection to existing sewers and record on "As Built" informative drawings.

Q. Install marker devices projecting above grade for tie-in fitting locations used by Plumbing Contractor

3.03 WYE BRANCHES

A. Install wye branches at locations shown on drawings. Install a removable, water tight plug at ends of all fittings

3.04 LATERALS

A. Install all sewer laterals at a minimum slope of 1/4" per foot toward the sewer main unless shown otherwise on the drawings. The end of all laterals shall terminate with a plain end (no bell).

B. Where the depth of the main pipeline warrants, construct sloped type laterals from the wye branch in accordance with the Standard Details. The determination as to type of riser, slope, and depth of lateral pipe at the termination point will be made by the Engineer in the field.

C. Install an approved watertight plug, braced to withstand pipeline test pressure thrust, at the termination of the lateral.

3.05 CLEANOUTS

A. Cleanouts shall be long sweep ells and pipe to grade with cleanout at grade set in concrete pad as detailed on drawings.

3.06 DOWNSPOUT TERMINATIONS

A. Downspouts shown to terminate at grade shall discharge onto splash blocks as specified in Section 076200.

B. Downspouts shown connected to downspout boot adapters and underground storm piping: Set adapters in concrete pad as detailed.

3.07 AREA DRAINS

A. General: Shall be set with inverts and top elevations as noted on plan or as required to suit finished grade. All inlet and outlet connections shall be sealed with non shrink grout.

B. Drain Basins: Shall be installed conforming with site details, manufacturer's directions and approved shop drawings. Connect to inlet/outlet piping.

3.08 TRENCH DRAINS

A. Install trench drains as detailed on drawings. Conform with manufacturer's directions and approved shop drawings. Embed in concrete according to manufacturer’s recommendations, connect to outlet piping and seal with non-shrink grout. Set as required to suit finished grade/slab.

3.09 TYING INTO EXISTING INLETS

A. General: Install pipe with inverts as noted on plan or as required to suit finished grade. All inlet and outlet connections shall be sealed with non-shrink grout.

3.10 TESTING STORM SEWER SYSTEMS

A. All systems shall be tested to ensure free flow. Test all inlets/outlets. Seal all leaks. Remove obstructions, replace damaged components and retest until satisfactory.

3.11 CAST-IN-PLACE CONCRETE CONSTRUCTION

A. Conform to the applicable requirements of Section 033000 Concrete.

3.12 CLEANING EXISTING STORM SEWER SYSTEMS

A. All existing storm lines/elements within the limits of the Contract shall be thoroughly rodded out and cleaned of all clogs, debris, build-up and blockages.

3.13 EXISTING SITE UTILITY ELEMENTS

A. The Contractor shall be responsible to raise (or lower) and modify existing manholes, cleanouts, water and gas valves and meters, catch basins/yard drains/inlets/area drains, and/or other utility elements to meet line of new paving or grading.

END OF SECTION 334000