

PROJECT MANUAL

MCLEAN HIGH SCHOOL ROOF REPLACEMENT PROJECT

1633 Davidson Road, McLean, VA 22101

BID SET – September 6, 2022

Invitation For Bid MMB-003-24



FAIRFAX COUNTY PUBLIC SCHOOLS

OFFICE OF FACILITIES MANAGEMENT

5025 SIDEBURN ROAD, ROOM 16

FAIRFAX, VA 22032

(703) 764-2457/ FAX (703) 239-0462

TABLE OF CONTENTS

COVER SHEET

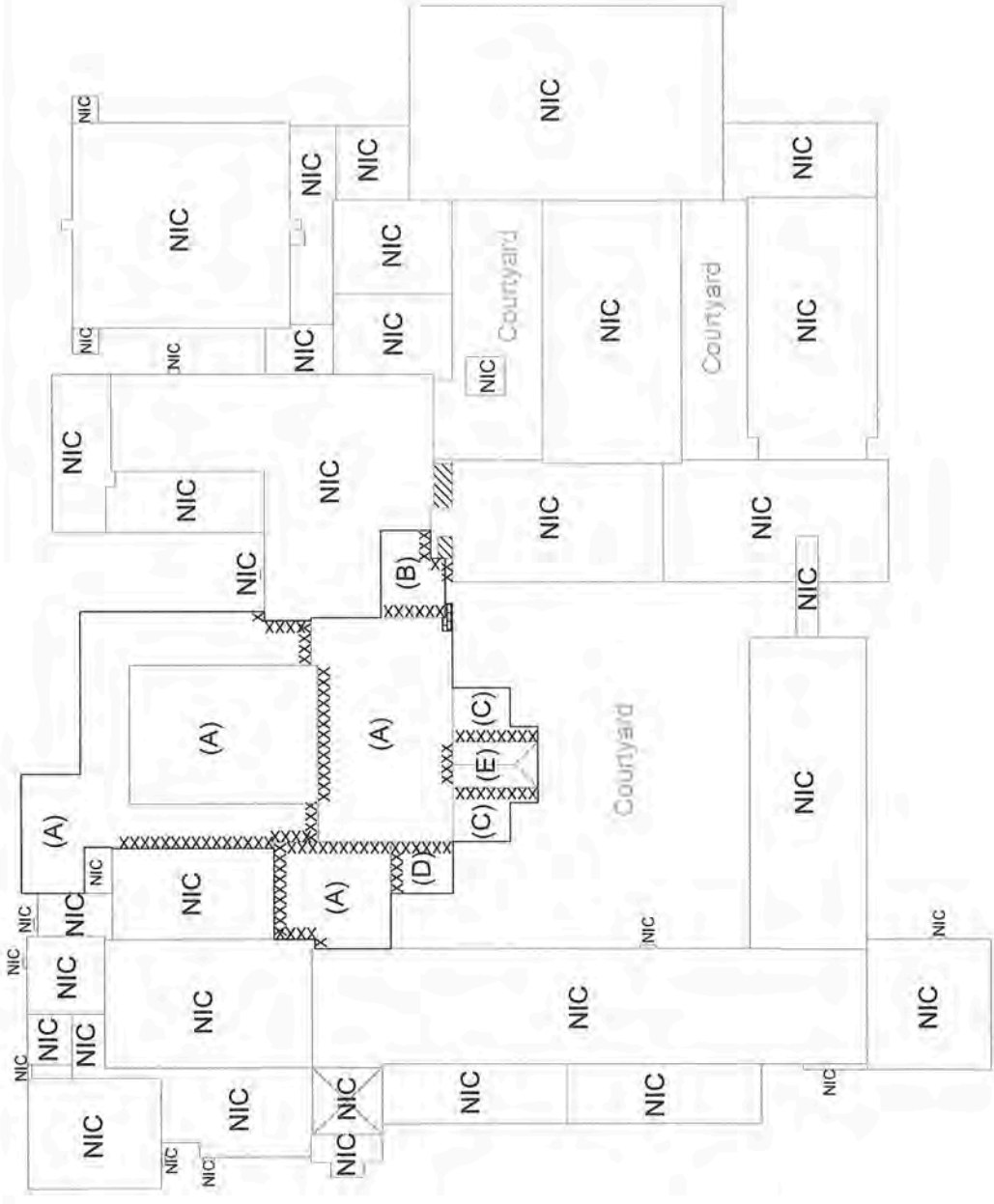
ROOF PLANS

SCOPE OF WORK

SPECIFICATIONS INCLUDING BID DOCUMENTS

TYPICAL DETAILS

McLean High School



EXISTING ROOF:
 (A) GRAVEL/4 PLY BUR/4" FIBERGLASS/GYPSUM
 (B) GRAVEL/4 PLY BUR/4" FIBERGLASS/METAL
 (C) GRAVEL/5 PLY BUR/3/4" FIBERGLASS/2" ISO/METAL
 (D) GRAVEL/4 PLY BUR/4" FIBERGLASS/CONCRETE
 (E) 1 3/4" STANDING SEAM METAL PANELS
 3" ISO METAL DECK

(A, B, D) NEW ROOF AND INSULATION SYSTEM AS PER SPEC. SECTION 07510 TYPE 1 (COMPLETE TEAR OFF OF ALL EXISTING ROOFING)
 (C) NEW ROOF AND INSULATION SYSTEM AS PER SPEC. SECTION 07510 TYPE 2 (PARTIAL TEAR OFF LEAVING BASE LAYER OF INSULATION.) NEW INSULATION TO BE 1 LAYER 2.5 ISO OVER EXISTING INSULATION.
 (E) NEW ROOF AND INSULATION SYSTEM AS PER SPEC. SECTION 07410. NEW 2.5 ISO OVER EXISTING ISO MECHANICALLY ATTACHED TO METAL DECK.
 XXXX NEW S LOCK METAL PANELS WITH 2 PIECE RECEIVER.

NOTE:
 1.) PROVIDE NEW OVERFLOW SCUPPER 1 PER DRAIN AT ALL GRAVEL STOP AND WOOD CANT LOCATIONS
 2.) ALL ROOF DRAINS TO BE REPLACED WITH LARGE DRAIN BOWLS AND NEW DECK PANS.

REROOF AREA +/- (37000 SF)

MCLEAN HIGH SCHOOL

RE-ROOFING SCOPE OF WORK

1. Remove existing roofing and insulation completely to the deck and provide new roofing and insulation as per specifications and specific notes as indicated on the roof plans.
2. Replace all flashings, roof drains, expansion and control joints, metal wall copings, wood blockings, pitch pockets and roof hatches.
3. Replace all existing gravel stops, fascia, gutters, splash blocks and downspouts with new as approved by Fairfax County Public Schools (FCPS) inspector.
4. Remove all vents which are less than 8" high above roof and replace them with minimum 12" high above roof.
5. Remove existing walkways.
6. Clean, sand, prime and paint all exposed steel supports on designated roof areas including but not limited to RTU support frames, roof ladders and steel supports for roof screens.
7. Abandoned pitch pockets, PRV, GV or capped off curbs shall be removed, and decking patched as required.
8. Provide crickets between roof drains, at mechanical equipment curbs and on the high side of all curbs. Submit shop drawings for approval.
9. Install tapered insulation between roof drains.
10. Field verify the location and number of all power roof ventilator (PRV), gravity ventilator (GV), vent thru roof (VTR), roof drains, control joints, ladders, etc.
11. Canopies: Remove existing roofing and flashings from existing canopies shown on roof plan and install new roofing and flashings. Field verify the location of all canopies.
12. Install metal wall panels at the area shown on the roof plan.
13. Any interior protection coverage with plastic is the responsibility of the contractor as directed by the FCPS inspector.
14. All deck flutes shall be swept clean of new and existing debris.

SPECIFICATIONS INCLUDING BID DOCUMENTS

BIDDING REQUIREMENTS, CONTRACT FORMS AND CONDITIONS OF CONTRACT

Section 00020	Invitation to Bid
Section 00100	Instructions to Bidders
Section 00300	Bid Form
Section 00301	Bid Bond
Section 00302	Performance Bond
Section 00303	Payment Bond
Section 00700	General Conditions

DIVISION ONE

GENERAL REQUIREMENTS

Section 01010	Summary of Work (Roof Replacement)
Section 01020	Allowances
Section 01040	Supervision and Coordination
Section 01045	Cutting and Patching
Section 01091	Applicable Standards
Section 01152	Part 1- Applications for Payment
Section 01152	Part 2 - Requisition Form
Section 01153	Change Order Procedures
Section 01200	Project Meetings
Section 01340	Shop Drawings, Product Data and Samples
Section 01370	Schedule of Values
Section 01400	Quality Control
Section 01510	Temporary Utilities
Section 01520	Construction Aids
Section 01530	Barriers
Section 01560	Temporary Controls
Section 01630	Substitutions and Product Options
Section 01700	Contract Closeout
Section 01710	Cleaning
Section 01740	Warranties and Bonds

DIVISION TWO

SITE WORK

Section 02070	Selective Demolition
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DIVISION THREE

NOT USED

DIVISION FOUR

NOT USED

DIVISION FIVE

METALS

Section 05120	Structural Steel
Section 05230	Metal Roof Decking
Section 05500	Metal Fabrications

SPECIFICATIONS INCLUDING BID DOCUMENTS

DIVISION SIX

WOOD AND PLASTIC

Section 06100

Rough Carpentry

DIVISION SEVEN

THERMAL & MOISTURE PROTECTION

Section 07410

Metal Roofing Systems

Section 07416

Exterior Wall and Soffit Panels

Section 07510

4-Ply Built-Up Roofing with Gravel Ballast and Insulation

Section 07513

Roof Drain Maintenance Markers

Section 07530

TPO Single-Ply Membrane Roofing (Canopies)

Section 07600

Flashing and Sheet Metal

Section 07830

Roof Hatches

Section 07900

Sealants

DIVISION EIGHT

NOT USED

DIVISION NINE

FINISHES

Section 09510

Acoustical Tile Ceilings

DIVISION TEN

NOT USED

DIVISION ELEVEN

NOT USED

DIVISION TWELVE

NOT USED

DIVISION THIRTEEN

NOT USED

DIVISION FOURTEEN

NOT USED

DIVISION FIFTEEN

MECHANICAL

Section 15010

General Provisions

Section 15050

Basic Materials and Methods

DIVISION SIXTEEN

ELECTRICAL

Section 16010

Electrical General Provisions

SECTION 00020

INVITATION TO BID

PART 1 - GENERAL

- 1.01 **Notice of IFB:** Notice is hereby given that the Fairfax County School Board ("Owner") will receive bids for the **McLean High School Roof Replacement Project, before, 2:00 p.m. on Thursday, September 21, 2023.**
- 1.02 Each bidder shall bear and be responsible for all costs, fees and expenses associated with its preparation and submission of a bid in response to this IFB. In no event shall any bidder be reimbursed by the Owner for any such costs, fees or expenses. Bid prices shall be inclusive of all labor, supplies, materials, equipment, permits, and sales or use taxes required to complete the Work in its entirety in strict accordance with the Contract Documents.
- 1.03 The procedure for withdrawal of bids and bid award public notification is set forth in the Instructions to Bidders.
- 1.04 Bids will be considered on a lump sum basis for the entire work described in the Contract Documents.
- 1.05 The Owner will not discriminate against a bidder solicitation or awarding of contracts because of race, religion, color, sex, national origin, age, disability, or any other basis prohibited by state law relating to discrimination in employment. Minority contractors and small business enterprises are invited and encouraged to submit bids in response to this solicitation. Each bidder shall indicate on its Bid Form whether or not it is a Small Business Firm or a Minority Business Firm, as such terms are defined in the instructions to Bidders. All responsive and responsible bidders will receive equal consideration for award.
- 1.06 Drawings and Specifications may be examined at the Owner's Office of Facilities Management Sideburn Support Center, 5025 Sideburn Road, Fairfax, Virginia 22032. **One (1)** set of bidding documents will be furnished to each bidder. No deposit is required per set.
- 1.07 Bidders are advised that the Contract Documents for this Project require the payment of prevailing wages to all mechanics, laborers, and other workers of every tier in accordance with the Fairfax County Prevailing Wage Ordinance and Virginia Code § 2.2-4321.3 (the "Prevailing Wage Requirements"). The successful Bidder's obligations with respect to the Prevailing Wage Requirements applicable to this Contract also include, but are not limited to, compliance with the certification, posting, and recordkeeping requirements set forth therein. Additional information regarding the Prevailing Wage Requirements can be viewed at the following webpage:
<https://www.fairfaxcounty.gov/topics/prevailing-wage-ordinance>

- 1.08 The Contractor shall perform Substantial and Final Completion of Work on or before the respective Substantial and Final Completion dates established in Section 01010, Summary of Work. It is the intent of the Owner to assess liquidated damages in the amounts shown in Section 01010 in the event that these dates are not met.
- 1.09 Unless cancelled or rejected, a responsive bid from the lowest responsible bidder shall be accepted as submitted, except that if the bid from the lowest responsible bidder exceeds available funds, the School Board may negotiate with the apparent low bidder to obtain a contract price within available funds.

The conditions and procedures for such negotiation are set forth in the current version of School Board Policy 8240, the text of which is available for review at www.fcps.edu, search for "Policies, Regulations and Notices", click this link, then select "Find a Policy".

In summary, negotiation may be undertaken on behalf of the School Board where, and to the extent such, is deemed to be in the best interests of the School Board. Office of Facilities Management staff, along with the project's design professionals and the apparent low bidder, will develop appropriate scope modifications that do not impair the proposed function of the project. These modifications will be priced by the apparent low bidder and reviewed by the Office of Facilities Management and the project's design professionals, which may recommend an award on that basis if such is deemed to be in the best interests of the School Board and the price is within available funds.

THE COUNTY SCHOOL BOARD OF FAIRFAX COUNTY, VIRGINIA

Rachna Sizemore-Heizer
Chair Member-at-Large

Dr. Michelle Reid
Superintendent of Schools

Charles W. Fanshaw
Interim Chief Operating Officer
Facilities, Transportation and
Food Services

Justin R. Moss
Executive Director
Office of Facilities Management

END OF SECTION

SECTION 00100

INSTRUCTIONS TO BIDDERS

1. QUALIFICATION OF BIDDER

- A. Only Bidders who have been prequalified in accordance with the Fairfax County Public Schools Capital Bond Improvement Projects **Roof Replacement Projects** Prequalification Application shall be permitted to submit bids for this project. Bids received from firms, which have not been prequalified, shall not be accepted and considered. The decision to prequalify a bidder will not, however, constitute a determination that the bidder is responsible / responsive for purposes of award. Notwithstanding prequalification, any bidder may be rejected as nonresponsible/ nonresponsive based in whole or in part upon subsequently discovered or disclosed information.
- B. Each bidder shall be required to be licensed pursuant to Title 54.1, Chapter 11 of the Virginia Code, as amended, before such bidder's bid may be submitted to the Owner and be eligible for consideration hereunder. Each bidder shall place its Virginia Contractor License Number on the outside of the envelope containing its proposal and in the space provided therefore on the signature page of the Bid Form.
- C. The bidder shall be qualified by experience, financing, organization, scheduling and coordination ability, and shall have the necessary labor and equipment to perform the work called for in the Contract Documents. The bidder shall have experience with work of similar type and size to that called for in the Contract Documents and such experience shall be based upon projects that have been completed within the last five years.

2. PRE-BID CONFERENCE

A mandatory Pre-Bid Conference will be held at 10:00 a.m. on September 6, 2023, at McLean High School, 1633 Davidson Road, McLean, VA 22101. Prequalified Bidders must attend the Pre-Bid Conference held at the site.

3. LICENSE AND REGISTRATION REQUIREMENTS

- A. All firms doing business in Fairfax County shall obtain a license as required by Chapter 4, Article 7, of the Code of the County of Fairfax, Virginia, as amended, entitled "Business, Professional and Occupational Licensing (BPOL) Tax." Questions concerning the BPOL tax should be directed to the Fairfax County Department of Tax Administration, telephone number: (703) 222-8234.
- B. Any foreign corporation transacting business in Virginia shall obtain a Certificate of Authority, as required by Section 13.1-757 of the Code of Virginia, from the Virginia State Corporation Commission, Post Office Box 1197, Richmond, Virginia 23218. The Commission may be reached at (804) 371-9733. The

consequences of failing to secure a Certificate of Authority are set forth in § 13.1-758 of the Virginia Code, as amended.

- C. A current State Corporation Commission Corporate Identification number. *Effective July 1, 2010, a company is required to provide FCPS a state authorization number to transact business in the state of Virginia. To obtain a State Corporation Commission Corporate Identification number, contact the state commission at 804-371-9733 or 1-800-552-7945, or <https://www.scc.virginia.gov/index.aspx>, email: sccinfo@scc.virginia.gov or The State Corporation Commission, Post Office Box 1197, Richmond, Virginia 23209.*

4. QUESTIONS AND COMMUNICATIONS; ISSUANCE OF ADDENDA

- A. All contact between prospective Bidders and the Owner with respect to this solicitation will be formally held at scheduled meetings or will be conducted in writing through the Owner's Office of Facilities Management. Except as expressly authorized herein, communications between prospective bidders, their agents and/or representatives and any representative of the Owner concerning interpretation of all or any portion of this solicitation are prohibited and may not be relied upon for any purpose. No interpretation of the meaning of these documents will be made to any bidder orally.
- B. Any question or request for an interpretation must be in writing and submitted: (i) by mail or hand delivery addressed to Architect and Owner as indicated on the cover page to this solicitation; or (ii) by email to Carlo Bertelli, Field Construction Supervisor by email cebertelli@fcps.edu or (703) 898-3322 or email to the Angela Mylechraine, Senior Buyer by email acmylechrain@fcps.edu or . In order to be eligible for consideration, a question or request for interpretation must be received on or before the deadline. Deadline will be established in the Pre-Bid Conference referenced in section 00020 ("Invitation to Bid"). Any and all such responses, interpretations and any supplemental instructions will be returned in writing to the prospective bidder requesting such interpretation, or will be in the form of written addenda. It shall be the responsibility of each bidder to ensure that all addenda are acquired. The addenda are acquired at www.fcps.edu, search for "Facilities Management", select "Facilities Management"-Current Solicitations', scroll to 'Current Solicitations'. Any issued addenda in connection with this project will be posted under 'Current Solicitations'. The bidder may also call the Field Construction Supervisor and Senior Buyer at (703) 764-2457 prior to bid submission in order to determine whether any addenda have been issued in connection with this solicitation." Notwithstanding any provision to the contrary, the failure of any bidder to receive any such addenda or interpretations shall neither constitute grounds for withdrawal of a bid nor relieve such bidder from any obligation under his Bid as submitted. "Points of Interests" will be attached to Addendum 1, which will replace Pre-Bid meetings/addenda. All addenda so issued shall become part of the Contract Documents.
- C. The bidders for this Project are notified that the site for performance of the Work is "unclassified" and that, as such, complete, accurate and/or reliable information

regarding surface and subsurface conditions likely to be encountered during performance of the Work is not available. Each bidder shall be provided full and complete access to the site of the Work (but only upon prearrangement with the Office of Facilities Management as to all aspects of the site visit) in order to conduct, at its expense, such tests and investigations of the site as it deems appropriate under the circumstances (and of which it has provided ten (10) days advance written notice to Owner) in order to evaluate and satisfy itself as to the surface and subsurface conditions likely to be encountered during performance of the Work.

Bidders which do not comply with the foregoing prearrangement and notice provisions shall not be permitted to visit the site or to conduct tests and investigations of the site.

It is the intent of these Contract Documents that the successful bidder for this Project shall bear full and complete responsibility for all surface and subsurface conditions, whether known or unknown, reasonably foreseeable or not, that shall be encountered during the performance of the Work and that, as such, each bidder shall include in its bid price for the Work an amount that it deems sufficient, in its sole and absolute discretion, to protect such bidder from the increased costs of performance that it may incur as a result of its assumption of responsibility for all such surface and subsurface conditions. Notwithstanding any provision in the Contract Documents to the contrary, the successful bidder shall in no event be entitled to additional compensation, time or other relief from its obligations under the Contract Documents as a direct or indirect result of surface or subsurface conditions encountered during performance of the Work. Pursuant to the Contract Documents, the successful bidder shall waive any and all claims against the Owner and the Architect that such bidder has, or may have in the future, arising out of or in connection with surface and subsurface conditions encountered during performance of the Work. In the event that the Owner or the Architect (or any of its or their representatives) provide the bidders with access to or copies of any reports, data or other materials or information pertaining to the surface or subsurface conditions at the site of the Project, each bidder shall: (a) acknowledge that such reports, data or other materials or information were supplied without representation or warranty as to the accuracy or completeness thereof; and (b) certify that it did not rely upon any such information in tabulating its bid price for the Work.

5. BID SECURITY

- A. Each bid shall be accompanied by a bid bond in an amount equal to five percent (5%) of the total amount of the principal's bid on the form prescribed herein (Section 00301). The bid bond shall be issued by a surety company licensed to conduct business as a surety in the Commonwealth of Virginia and otherwise satisfying any further requirements with respect to sureties set forth in the General Conditions. In lieu of a bid bond, a bidder may submit a certified check, cashier's check or cash escrow in the face amount required for the bond. Such

bid security shall be given as a guarantee that the bidder will enter into a contract and provide the required contract security and insurance if awarded the work.

- B. The bid security of the unsuccessful bidders will be returned on or before the date that is five (5) days after the execution of the contract or, if no such contract shall have been executed, on or before the date that is 60 days after the date of opening of the bids. The bid security of the successful bidder will be returned only after such bidder shall have executed the agreement and furnished the contract security and evidence of insurance required hereunder.
- C. If the bidder to whom the Contract is awarded refuses or neglects to execute the agreement or fails to furnish the required contract security and evidence of insurance within ten (10) days after receipt of the notice, the amount of such bidder's bid security shall be forfeited to the Owner; provided, however, that no such forfeiture shall exceed the lesser of: (i) the difference between the bid for which the bond was written and the next low bid; and (ii) the face amount of the bid bond. If the bidder to whom the contract is awarded refuses or neglects to execute the agreement or fails to furnish the required contract security and evidence of insurance, then the award of the contract may be annulled and the Owner may: (i) award a contract hereunder to the next best bidder and such bidder shall fulfill every requirement set forth in these documents as if it were the original party to whom the award was made; or (ii) reject all of the bids submitted hereunder, as its interest may require. Except as provided herein with regard to withdrawal of bids, no plea of mistake in the bid shall be available to the bidder for the recovery of its bid security or as a defense to any action based upon such bidder's failure or refusal to execute a contract and to furnish the required contract security and evidence of insurance.

6. CONTRACT SECURITY

- A. Within ten (10) days after issuance of a Notice of Award, the successful bidder shall execute and deliver to the Owner an Agreement on the form prescribed herein and shall furnish the following:
 - 1) Two (2) original copies of the performance bond in an amount equal to 100 percent of the contract sum conditioned upon the faithful performance of the contract in strict conformity with the plans, specifications, and conditions of the contract.
 - 2) Two (2) original copies of the payment bond in an amount equal to 100 percent of the contract sum conditioned upon the prompt and faithful payment of all persons and entities who have and fulfill contracts which are directly with the contractor for performing labor or furnishing materials in the prosecution of the work provided for in the contract.
 - 3) One (1) or more certificates of insurance evidencing the types and amounts of insurance coverage required to be maintained by the Contractor under the Contract Documents.

- B. Each of the following Subcontractors shall submit Performance and Payment Bonds in the amount of one hundred percent (100 percent) of its subcontract amount. Bonds shall (i) be substantially in the form herein provided (Sections 00302 and 00303), (ii) name the Contractor as obligee, and (iii) be issued by a surety company licensed to conduct business in Virginia. Cost of said Bonds shall be included in the Contract Sum:
- 1) Roofing
- C. Any performance or payment bond required hereunder shall be in the form included in these Contract Documents and shall be executed by a surety company that is legally authorized to transact business as a surety in the Commonwealth of Virginia and that otherwise satisfies any requirements with respect to sureties set forth in the General Conditions. In lieu of a payment and/or performance bond, the successful bidder may furnish a certified check or cash escrow in the face amount(s) required for such bond(s).

7. BIDS

- A. In order to be entitled to consideration hereunder, bids shall be made in accordance with the following instructions.
- 1) Before submitting a bid, bidders shall visit the site of the work, fully inform themselves as to all existing conditions and limitations, and shall include in the bid a sum to cover the cost of all items included in the Contract Documents.
 - 2) Bids shall be made in duplicate upon the Bid Form, a copy of which is bound herein. Bids shall be completed, including each and every item; bids shall be stated both in writing and in figures. The signatures of all persons shall be in longhand. The completed Bid form shall be without erasures or alterations.
 - 3) No Bid shall contain any recapitulation of the work to be performed, and no alternate bid will be considered unless called for. No exceptions, exclusions or qualifications, unless expressly authorized, shall be permitted on the Bid Form. No oral, telegraphic or telephonic bids, or modifications, either to the Bid Form or the Bid Envelope, shall be considered. Failure to provide all required documentation with the Bidder's response to this IFB may result in rejection of the Bid.
 - 4) Bids shall be time-stamped and deposited in the bid box within Room 16, 5025 Sideburn Road, Fairfax, VA 22032, on or before the day and hour set for the opening of bids, enclosed in an opaque sealed envelope and bearing the title of the work, name of bidder and bidder's Virginia Contractor License Number. Bids may be modified or withdrawn by bidders prior to, but not later than, the time fixed for the opening of same.

- 5) It is the sole responsibility of each bidder to deliver its bid timely and to the precise location indicated as the place for receipt and opening of bids. Accordingly, bids which are transmitted via US Mail, commercial courier, or overnight delivery service to the Owner are not guaranteed to be brought timely to the attention of the Owner's official who is responsible for opening the bids for this project.
- 6) Bids shall be firm and irrevocable for a period of 60 days following the date of opening of the bids.

8. OPENING OF BIDS

Bids will be opened and read aloud at the time and place set forth in the Invitation to Bid. Bidders, their representatives, and other interested persons may be present at the opening of the bids. In the event that only one Bid Form is received by the Owner in response to the Invitation to Bid, the Owner may, in its discretion, decline to open such bid and return the unopened envelope to the bidder.

9. LATE BIDS

Any Bids or unsolicited materials relating to a Bid that are received by the Owner after the date and time specified for the submission of bids will not be eligible for consideration by the Owner. Bids received after the bid submission deadline will be returned to the Bidder unopened, providing that sufficient bid identification information is shown on the outside of the bid envelope.

10. WITHDRAWAL OF BIDS:

- A. A bidder may withdraw his bid from consideration if the price bid was substantially lower than the other bids due solely to a mistake in the bid, provided the bid was submitted in good faith, and the mistake was a clerical mistake as opposed to a judgment mistake, and was actually due to an unintentional arithmetic error or an unintentional omission of a quantity of work, labor, or material made directly in the compilation of a bid, which unintentional arithmetic error or unintentional omission can be clearly shown by objective evidence drawn from inspection of original work papers, documents, and materials used in the preparation of the bid sought to be withdrawn.

If a bid contains both clerical and judgment mistakes, a bidder may withdraw his bid from consideration if the price bid would have been substantially lower than the other bids due solely to the clerical mistake, that was an unintentional arithmetic error or an unintentional omission of a quantity of work, labor, or material made directly in the compilation of a bid that shall be clearly shown by objective evidence drawn from inspection of original work papers, documents, and materials used in the preparation of the bid sought to be withdrawn.

- B. The following is the procedure for withdrawal of a bid and is stated in the advertisement for bids:

- 1) A bidder, who seeks to withdraw his bid in accordance with this provision, shall give notice in writing of his claim of right to withdraw his bid within two business days after the conclusion of the bid opening procedure and shall submit original work papers with such notice to:

Justin R. Moss
Executive Director, Office of Facilities Management
Facilities, Transportation and Food Services
Fairfax County Public Schools
5025 Sideburn Road
Fairfax, VA 22032
Telephone Number (703) 764-2405
Email: jrmoss@fcps.edu

The mistake shall be proved only from the original work papers, documents, and materials delivered as required herein. The work papers, documents, and materials submitted by the bidder shall, at the bidder's request, be considered trade secrets or proprietary information subject to the conditions of subsection F of Section 2.2-4342 of the Code of Virginia.

- C. No bid may be withdrawn when the result would be the awarding of this Contract to another bidder in which the ownership of the withdrawing bidder is more than five percent (5%).
- D. If a bid is withdrawn, the lowest remaining bid shall be deemed to be the low bid. No bidder who is permitted to withdraw a bid shall, for compensation, supply any material or labor, or perform any subcontract or other work agreement for the person or firm to whom the Contract is ultimately awarded or otherwise benefit, directly or indirectly, from the performance of the project for which the withdrawn bid was submitted.
- E. The Office of Facilities Management (OFM), acting for the School Board, shall notify the bidder in writing within five (5) business days of its decision regarding the bidder's request to withdraw its bid. If OFM denies the withdrawal of a bid, it shall state in such notice the reasons for its decision and award the contract to such bidder at the bid price, provided such bidder is a responsible and responsive bidder. At the same time that the notice is provided, OFM shall return all work papers and copies thereof that have been submitted by the bidder.

11. CANCELLATION, REJECTION OF BIDS; WAIVER OF INFORMALITIES

The Owner reserves the right to cancel this solicitation, to accept or reject any or all bids submitted hereunder, or to waive any informality in any one or all bids received.

12. AWARD OF CONTRACT

- A. The Contract will be awarded, if at all, under the terms and conditions of the Contract Documents to the lowest responsive and responsible bidder, complying

with these instructions and the Invitation for Bid. The responsibility of bidders will be considered in making the award. The Contract award will also be determined by the Owner, with due consideration given to the ability of the bidder to cooperate with separate contractors for the Project and to coordinate, schedule and complete the Work within the prescribed time period. The Owner reserves the right to award the Contract that would be in the best interests of the Owner.

- B. Unless cancelled or rejected, a responsive bid from the responsible bidder shall be accepted as submitted, except that if a bid from the responsive and responsible bidder exceeds available funds, then the Owner may negotiate with such responsive and responsible bidder to obtain a contract price that is within available funds.

Negotiation may be undertaken when there is insufficient time to re-advertise with a modified specification and/or there are not clearly definable elements of the specifications, which can be removed to permit a re-advertisement or it is otherwise in the best interest of the Owner to negotiate.

If negotiation is undertaken, the Owner may negotiate changes in the solicitation with the lowest responsive and responsible bidder to obtain a satisfactory price within available funds. If a satisfactory price cannot be agreed upon, then the negotiation shall be terminated, and the solicitation cancelled.

- C. Public notice of the award of contract or the announcement of the decision to award a contract will be set forth on the website of Fairfax County Public Schools www.fcps.edu, search for "Bid Results", select "Facilities Management Current Solicitations", scroll to Bid Results. While school division staff may communicate procurement results to bidders or offerors, each bidder or offeror has the responsibility to monitor the FCPS website for its own purposes.
- D. The Owner reserves the right to require submission of references in sufficient time to make inquiries regarding the responsibility of the bidder before making the award, and the right to require a recent financial statement from the bidder if the Owner deems it necessary. The Owner also emphasizes its intention not to award any contract to a bidder whose past performance shows his firm to be generally late in performance of construction contracts. The ability of the low bidder to provide the required bonds will not in and of itself establish the responsibility of the bidder.
- E. Under circumstances where no add alternates are included on the Bid Form, the low bidder shall be determined by the Owner based upon a comparison of the base bid amounts set forth on such Bid Forms. In the event that one or more add alternates are included on the Bid Form, the low bidder shall be determined by the Owner based upon the aggregate amount of: (i) the base bid, and (ii) any add alternates selected by the Owner. Add alternates shall be selected by the Owner based upon its authorized construction budget and the Owner's needs and requirements at the time of the bid opening. The Owner reserves the right, in its sole discretion, to select or reject any or all of the add alternates (or to

select any combination of add alternates) included in the Bid Form. The Owner shall determine the low bidder for the base bid and any selected add alternates by means of a "blind" bid review process which shall operate generally as follows:

- 1) At the bid opening, a designated staff member from the Owner's Office of Facilities Management shall complete one bid tabulation sheet, which shall identify each bidder by name, and the base bid amount and the add alternative amount if applicable. The Director of the Owner's Office of Facilities Management or his designee (the "Director") shall not attend the bid opening.
- F. Any quantities set forth on the Bid Form represent estimates only and are included solely for the purpose of evaluating and comparing the bids received.
- G. A "responsive bidder" shall mean a bidder who has submitted a bid which conforms, in all material respects, to the requirements of the bidding documents.
- H. A "responsible bidder" shall mean a bidder who has the capability, in all respects, to perform fully the Contract requirements and the moral and business integrity and reliability, which will assure good faith performance and who has been prequalified, if required.
- I. The Office of Facilities Management reserves the right to require from the bidder:
- 1) Submission of references within two (2) business days after the opening of the bids;
 - 2) A list of projects completed by bidder within the last two (2) years which are similar in size and scope to the work described in this solicitation; and/or
 - 3) Financial statements indicating current financial status, prepared in accordance with generally accepted accounting principles, by a duly licensed CPA.
- J. The successful low bidder, upon notice of award of contract, shall submit a completed "Responsible Land Disturber Certification" through FCPS, to Plan and Document Control, Office of Land Development Services (LDS), Fairfax County DPWES.

13. PROTEST OF AWARD OR DECISION TO AWARD

- A. Any bidder may protest the award or the decision to award this Contract by submitting a protest in writing to the Assistant Superintendent, or designee, for the Department of Facilities, Transportation and Food Services 8115 Gatehouse Road, Suite 3400, Falls Church, VA 22042, no later than ten (10) days after the award or the announcement of the decision to award, whichever occurs first;

however, that no protest shall lie for a claim that the selected bidder is not a responsible bidder.

The written protest must include the basis for the protest and the nature of the relief sought. The Assistant Superintendent, or designee, for the Department of Facilities, Transportation and Food Services shall issue a decision in writing within ten (10) days of receipt of the protest, stating the reasons for the action taken.

This written decision shall be final unless the bidder appeals within ten (10) days of receipt of the written decision by instituting legal action as provided in the Code of Virginia.

Nothing in this section shall be construed to permit a bidder to challenge the validity of the terms and conditions of the Invitation to Bid.

- B. If, prior to the award, it is determined that the decision to award is arbitrary and capricious, then the sole relief shall be a finding to that effect.

If, after an award, it is determined that an award of a contract was arbitrary or capricious, then the sole relief shall be as hereinafter provided.

Where the award has been made but performance has not yet begun, the performance may be enjoined.

Where the award has been made and performance has begun, the Assistant Superintendent, or designee, for the Department of Facilities, Transportation and Food Services may declare the Contract void upon a finding that the action is in the best interest of the school division.

Where a contract is declared void, the performing contractor shall be compensated for the cost of performance at the rate specified in the Contract up to the time of such declaration. In no event shall the performing contractor be entitled to lost profits.

- C. Pending final determination of a protest, the validity of the award shall not be affected by the fact that a protest has been filed.
- D. An award need not be delayed for the period allowed a bidder to protest, but in the event of a timely protest, no further action to award this Contract will be taken unless the Assistant Superintendent, or designee, for the Department of Facilities, Transportation and Food Services makes a written determination that proceeding without delay is necessary to protect the public interest or that the bid will expire.

14. SUBSTITUTIONS; PRE-APPROVED SUPPLIERS

- A. Unless otherwise provided in the bidding documents, the name of a certain brand, make, or manufacturer is intended to restrict bidders to the specific brand, make, or manufacturer specified. Substitute materials proposed as equal to materials specified shall be submitted in writing to the Owner by the bidder with full substantiating data for evaluation no later than ten (10) days prior to bid opening; substitute materials shall not be considered for evaluation after this time period. Proposed substitute materials which equal or exceed the performance standard of the specified materials in the sole judgment of the Owner will be included in an "Approved Substitute Materials Bulletin" to be issued prior to the bid opening date.
- B. For purposes of this solicitation and any resulting contract, the Owner's designation of any one or more manufacturers, subcontractors and/or suppliers as "pre-approved" shall signify only that such manufacturers, subcontractors and suppliers previously have submitted work samples to the Owner that satisfied the Owner's requirements. The Owner's designation of any one or more manufacturers, subcontractors and/or suppliers as "pre-approved" shall in no event be deemed or construed to be a representation or warranty on the part of the Owner of any such manufacturer's, subcontractor's or supplier's capability of or capacity for (in terms of financial wherewithal, personnel and equipment availability, managerial ability, product quality or otherwise) performing or furnishing any portion of the Work in accordance with the requirements of this solicitation. Each bidder shall conduct such independent investigation into the qualifications, experience and abilities of its selected manufacturers, subcontractors and suppliers, as it deems appropriate under the circumstances.

15. SMALL AND MINORITY BUSINESS ENTERPRISES

- A. The Fairfax County Human Rights Ordinances and relevant Federal and State Laws, orders and regulations require Fairfax County to ensure that its procurement practices are non-discriminatory and promote equality of opportunity for Small, Minority and Women-Owned Business Enterprises.
- B. Small Business/Organization is an independently owned and operated business which, together with affiliates, has 250 or fewer employees or average annual gross receipts of \$10 million or less averaged over the previous three years.
- C. Minority Business is a business concern that is at least 51 percent owned by one or more minority individuals or in the case of a corporation, partnership or limited liability company or other entity, at least 51 percent of the equity ownership interest in the corporation, partnership or limited liability company or other entity is owned by one or more minority individuals and both the management and daily business operations are controlled by one or more minority individuals. Such individuals shall include Asian American, African American, Hispanic American, Native American, Eskimo or Aleut.

- D. Woman-Owned Business is a business concern that is at least 51 percent owned by one or more women who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership or limited liability company or other entity, at least 51 percent of the equity ownership interest is owned by one or more women who are U.S. citizens or legal resident aliens, and both the management and daily business operations are controlled by one or more women who are U.S. citizens or legal resident aliens.

16. CONFLICT OF INTEREST

The provisions of the State and Local Government Conflict of Interests Act (Va. Code § § 2.2-3100 *et seq.*) and Article 6 of the Virginia Public Procurement Act entitled "Ethics in Public Contracting" (Va. Code Ann. § § 2.2-4367 *et seq.*) are incorporated herein by reference, and all Bidding Documents shall be deemed to incorporate appropriate reference to these provisions. The Contractor shall incorporate the above conflict-of-interest clause in each subcontract.

17. GOVERNING LAW

- A. The Contract Documents shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, without reference to conflict of laws principles. In the event that there is a conflict between any provision set forth in the Contract Documents and the Code of Virginia, and specifically Section 2.2-4300 *et seq.* (the "Virginia Public Procurement Act"), the Code of Virginia shall control. The Contractor is cognizant of the provisions of the Comprehensive Conflict of Interest Act (Va. Code Ann. Section 2.2-3100 through 2.2-3127) and Article 6 of the Virginia Public Procurement Act entitled "Ethics in Public Contracting" (Va. Code Ann. Section 2.2-4367 through 2.2-4377).
- B. Legal Provisions Deemed Included: Each and every provision of any law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein and if, through mistake or otherwise, any such provision is not inserted or is not correctly inserted, then upon application of either party the Contract shall forthwith be physically amended to make such insertion. The Owner does not discriminate against faith-based organizations.

18. COMPLIANCE WITH LAWS; PERMITS, FEES, AND NOTICES

The successful bidder shall be required to comply with all local, state and federal laws, rules, regulations and ordinances applicable to the contract and to the work contemplated hereby. The successful bidder shall be required to obtain, at its expense, all permits, licenses and other authorizations necessary for the prosecution of the Work, except that the Owner shall obtain, at its expense, the General Building Permit and any easement agreement necessary and indispensable to the completion of the Project. The successful bidder shall be responsible for giving all notices and complying with all laws, ordinances, rules, regulations and directives of any public authority bearing on the performance of the work.

19. CONSTRUCTION SAFETY

- A. The Contractor shall comply with the construction safety standards promulgated by the U.S. Department of Labor and by the Virginia Department of Labor and Industry.

END OF SECTION

SECTION 00300

BID FORM

Name of Bidder: _____

Bidder's Mailing
Address for Notices: _____

Bidder's Principal
Office Address: _____

Telephone No.: _____

Fax No.: _____

Email Address: _____

Bidder's Designated Contact Person: _____

TO: FAIRFAX COUNTY SCHOOL BOARD (the "Owner")
5025 Sideburn Road, Room 16
Fairfax, VA 22032

RE: **MCLEAN HIGH SCHOOL ROOF REPLACEMENT PROJECT**

Ladies and Gentlemen:

The undersigned Bidder, having examined the Drawings, Specifications and remaining Contract Documents for the above-referenced Project and having visited the site and examined all conditions affecting the Work, hereby proposes and agrees to furnish all labor, supplies, materials, and equipment and to perform all actions necessary to complete the entire Work in strict accordance with the Contract Documents for the following bid amount (to be set forth in words and in figures in the spaces set forth below):

Base Bid Amount:

_____ Dollars and _____ Cents; \$ _____

1. **Certain Agreements of the Bidder.** The undersigned Bidder hereby makes the following representations, warranties and covenants to the Owner, which representations, warranties and covenants are intended to be relied upon by the Owner in making an award of the above-referenced Contract.

- A. The undersigned Bidder hereby acknowledges that time is of the essence to the Contract and agrees to commence the Work on the date set forth as the date for commencement of the Work in the Notice to Proceed or, if no such date is specified, then immediately after receipt of the Notice to Proceed. The undersigned covenants and agrees to fully complete the Work prior to the expiration of the Contract Period, as such term is defined in the Contract Documents. The undersigned hereby declares that the Contract Period is sufficient to assure timely and satisfactory completion of the Work. The undersigned Bidder acknowledges that, in the event that the Work is not completed within the timeframes established in the Contract Documents, then he will be assessed liquidated damages in the amount set forth in Section 01010, Summary of Work, for each day that the time consumed in completing the Work exceeds the time provided therefor in the Contract Documents.
- B. The undersigned Bidder hereby certifies that the Bid Amount includes: (a) all labor, supplies, materials, equipment, and permits required to complete the Work in its entirety in strict accordance with the Contract Documents; (b) all costs associated with the successful bidder's responsibilities for coordination and cooperation with the Owner and any Separate Contractors at the site of this Project; (c) all costs associated with the successful bidder's responsibilities with regard to surface and subsurface conditions that may be encountered during performance of the Work; (d) all applicable sales and use taxes; and (e) allowances, if any, contemplated by the Contract Documents.
- C. By signing this Bid, the undersigned Bidder hereby certifies that: (i) neither the Bidder nor any employee of the Bidder who will have direct contact with students has been convicted of a felony or any offense involving the sexual molestation or physical or sexual abuse or rape of a child; and (ii), unless expressly disclosed in an attachment to this Bid on the Bidder's letterhead stationery, neither the Bidder nor any employee of the Bidder who will have direct contact with students has been convicted of a crime of moral turpitude.
- D. The undersigned Bidder hereby represents and warrants to the Owner that the Bidder: (a) has reviewed and thoroughly understands the scope, terms and conditions set forth in this solicitation; (b) has made due inquiry of the School Board as to the existence of any addenda issued in connection with this solicitation; (c) is satisfied that it has received any and all such addenda and the Bidder has taken the contents thereof into consideration when preparing and submitting this Bid; and (d) accepts full and complete responsibility for the receipt of any and all such addenda and waives any claim of mistake or error in its Proposal based upon its failure, in fact, to have received any one or more addenda.
- E. The undersigned Bidder further hereby represents and warrants to the Owner that the Bidder: (a) has been provided the opportunity to conduct, at its expense, such tests and investigations of the site as it deems appropriate under the circumstances in order to evaluate and satisfy itself as to the surface and subsurface conditions likely to be encountered during performance of the Work; (b) if successful hereunder, shall bear full and complete responsibility for all surface and subsurface conditions, whether known or unknown, reasonably

foreseeable or not, that shall be encountered during performance of the Work; and (c) has included in its bid price an amount that it deems sufficient, in its sole and absolute discretion, to protect such bidder from the additional costs of performance that it may incur as a result of its assumption of responsibility for all surface and subsurface conditions encountered during performance of the Work. The Bidder hereby acknowledges that any reports, data, or other materials or information supplied by or on behalf of the Owner and/or the Architect with regard to surface and/or subsurface conditions at the site of the Project were given without representation or warranty as to the accuracy or completeness thereof and that the bidder did not rely upon any such information in tabulating its bid price for the Work.

- F. The undersigned Bidder covenants and agrees that in the event this Bid is one of the three lowest, as determined by Owner, Bidder will deliver to the Owner, within 48 hours after the bid opening, a written list of subcontractors (including names, address, and telephone number) for the following portions of the Work:

Roofing

- G. The three apparent low bidders will be required to deliver to the Owner, within 48 hours after the bid opening, the following:
- 1) A list of all projects (including FCPS and non-FCPS projects) to include those for which you are in receipt of a letter of intent from FCPS, and any projects for which you are the apparent low bidder. This list must include the total cost of each project and the square footage of each project from June 1, 2024, through September 1, 2024.
 - 2) A project schedule to include a mobilization plan that includes the stocking material, start, and completion date for each FCPS location. FCPS will utilize this information to evaluate the capacity and ability of bidders to determine responsibility. A bidder may be rejected as non-responsible based on this information

2. “Preapproved” or “approved” Manufacturers, Subcontractors and/or Suppliers.

- A. For purposes of this solicitation and any contract which may result herefrom, the Owner's designation of any one or more manufacturers, subcontractors and/or suppliers as “preapproved” or “approved” shall signify only that such manufacturers, subcontractors and suppliers previously have submitted work samples to the Owner which satisfied the Owner's requirements for a specified portion of the Work. The Owner's designation of any one or more manufacturers, subcontractors and/or suppliers as “preapproved” or “approved” shall in no event be deemed or construed to be a representation or warranty on the part of the Owner of any such manufacturer's, subcontractor's or supplier's capability or capacity (in terms of financial wherewithal, personnel and equipment availability, managerial ability or otherwise) of performing any portion of the Work in accordance with the requirements of the Contract Documents. Each Bidder shall conduct such independent investigation into the qualifications, experience and

abilities of its selected manufacturers, subcontractors and suppliers as it deems appropriate under the circumstances.

- B. The Contractor hereby acknowledges and agrees that, as between the Owner and the Contractor, the Contractor shall bear full and complete responsibility for the performance of its subcontractors, manufacturers and suppliers, regardless of whether any such subcontractor, manufacturer or supplier was designated as "preapproved" or "approved" by the Owner. The Owner's designation of any one or more manufacturers, subcontractors and/or suppliers as "preapproved" shall in no event be deemed or construed to be a representation or warranty on the part of the Owner of any such manufacturer's, subcontractor's or supplier's capability or capacity (in terms of financial wherewithal, personnel and equipment availability, managerial ability or otherwise) of performing any portion of the Work in accordance with the requirements of the Contract Documents. The Contractor is responsible for conducting such independent investigation into the qualifications, experience and abilities of its selected manufacturers, subcontractors and suppliers, as it deems appropriate under the circumstances.

3. Miscellaneous Provisions.

- A. In the event that changes in the Work, not covered in the Contract Documents and involving added cost, are directed to be performed on a cost-plus fee basis, such fee shall be calculated in accordance with Section No. 01153, paragraph 1.06.
- B. The Owner reserves the right to defer award of Contract for a period of 60 days after the date for submission of bids, or for such longer period as shall be agreed upon by the parties in writing.
- C. The Owner reserves the right to accept or reject any proposed subcontractor, supplier, or materials/product proposed as equal to that specified herein.
- D. Minority or small business firms information:

Please check the following information relevant to your firm: (See Instructions to Bidders for definitions).

Virginia Small Business and Supplier Diversity Certification Number: _____

SWaM Certification Type:

Minority Business Firm: Yes _____ No _____

Small Business Firm: Yes _____ No _____

Women-Owned Firm: Yes _____ No _____

The above information is requested for statistical purposes only. All bidders tendering responsive and responsible bids hereunder will receive equal consideration for award.

4. **Fairfax County Construction Safety Resolution.** The Contractor shall abide by, and shall be subject to, the Fairfax County Construction Safety Resolution, as adopted by the Fairfax County Board of Supervisors on December 8, 2003, and as excerpted and modified below.
- A. Each bid submitted for a contract for construction, alteration, and/or repairs, shall include a list of all the following actions:
- 1) Willful violations, violations for failure to abate, or repeated violations, for which the Bidder was cited by (a) the United States Occupational Safety and Health Administration; (b) the Virginia Occupational Safety and Health Administration; or (c) the occupational safety and health plan for any other public jurisdiction; or
 - 2) Three (3) or more serious construction safety violations for which the Bidder was cited by the (a) United States Occupational Safety and Health Administration; or (b) the Virginia Occupational Safety and Health Administration; or (c) the occupational safety and health plan from any other public jurisdiction.
 - 3) Termination of a contract between the Bidder and any public entity by its purchasing agent or his designee for safety violations.
- B. If the Bidder has not received or been the subject of any such violations referenced in paragraph A in the three (3) years prior to the bid submission, then the Bidder shall so indicate by certification of Safety Violations. The Bidder will also indicate on this form each state in which work was performed in the three (3) years prior to the bid submission.
- C. No construction contract, as discussed above, may be bid on by any Bidder or contractor who has been the subject of any citations for the type and number of violations listed in paragraph A, above, which have become final within three (3) years prior to bid submission.
- 1) Notwithstanding the language of paragraph C, above, any Bidder or contractor who has been the subject of a violation, as described in paragraph A(1), which has become final within three (3) years prior to bid submission, may bid, if the Bidder or contractor satisfactorily passes an eligibility evaluation, as determined by Owner.
 - 2) Notwithstanding the language of paragraph C, above, any Bidder or contractor who has been the subject of the type and number of violations as described in paragraph A(2), which have become final within three (3) years prior to bid submission, may bid, if the Bidder or contractor satisfactorily passes an eligibility evaluation, as determined by Owner.
 - 3) Notwithstanding the language of paragraph C, above, any Bidder or contractor who has previously been terminated from a County contract, as described in paragraph A(3), within three (3) years prior to the bid

submission, if the Bidder or contractor satisfactorily passes an eligibility evaluation, as determined by Owner.

- D. Prior to bidding on a project under the provisions of paragraph C above, a contractor may request that a determination be made regarding its eligibility to submit a bid on a contract under the terms of this resolution. However, this request for determination and any subsequent adjudication process must be completed prior to submitting a bid on any project and the request for determination (including all information required) must be received by Owner no later than twenty-one (21) days before bids are due, unless otherwise stated in the Advertisement for Bid. The information required to be submitted by the Bidder for evaluation is stated in the County Safety Resolution and is available from the Owner's Office of Facilities Management. The determination of eligibility rendered by the Director of Facilities Management or his designee shall be final.
- E. No Contractor or Subcontractor contracting for any part of the contract work shall require any laborer, mechanic, or other person employed in the performance of the contract to work in surroundings or under working conditions which are hazardous or dangerous to his safety, as determined under construction safety standards promulgated by the U. S. Department of Labor or by the Virginia Department of Labor and Industry.
- F. No contractor awarded a School Board construction contract shall knowingly employ or contract with any person, company, or corporation for services pursuant to that contract if such person, company, or corporation could not have been awarded such contract due to the restrictions above.

By signing this Bid, the undersigned Bidder confirms that it has not received or been the subject of safety violations in the three (3) years prior to the date of this bid submission, and is in compliance with the requirements above.

The undersigned Bidder hereby acknowledges and agrees that the Owner has the right to reject any or all bids and to waive any informality in a bid. Except as expressly set forth in the Instructions to Bidders, this Bid, once submitted, may not be withdrawn for a period of 60 days from the date fixed for opening of the Bids.

The undersigned bidder has incorporated in its bid all costs associated with complying with the Prevailing Wage Requirements.

Accompanying this Bid, at the election of the undersigned Bidder, is: (I) a certified check, (ii) a cash escrow, or (iii) a bid bond in an amount equal 5% of the total amount of the Principals's Bid.

Bidder's disclosure pursuant to Safety Resolution (as stated above):

Safety Violation(s): _____

List of public jurisdictions (states and District of Columbia) in which Bidder performed work in the 3 years prior to bid submission:

(Legal Name of Bidder)

By: _____
(Signature of Bidder's Authorized Representative)

Printed Name: _____

Title: _____

Date: _____

Bidder's Virginia Contractor's License Number: _____

Bidder's Virginia State Corporation Commission ID Number (SCC ID#) _____

Fairfax County Business/ Professional / Occupational License Number (BPOL#) _____

State in which Bidder's Principal Office is Located: _____

END OF SECTION

SECTION 00301

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ of _____ (hereinafter called the "Principal"), and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in _____, and authorized to do business in the Commonwealth of Virginia as a surety (hereinafter called the "Surety"), are held and firmly bound unto FAIRFAX COUNTY SCHOOL BOARD (hereinafter called the "Obligee") in the full and just sum which is equal to 5% of the total amount of the Principal's Bid (as that term is defined below), as submitted to the Obligee (such total amount referred to herein as the "Total Bid"), in good and lawful money of the United States of America, to be paid upon demand of the Obligee, for the payment of such sum well and truly to be made, the Principal and the Surety bind themselves, their respective successors, and permitted assigns, jointly and severally and firmly by these presents. The Total Bid is the aggregate amount (including amounts set forth with respect to any and all Alternates) set forth on the Principal's Bid Form for performance of the work described below, as submitted to and maintained by the Obligee (such Bid Form referred to herein as the "Bid"). The Surety hereby acknowledges and agrees that the Bid shall be deemed to be incorporated by reference in this Bid Bond to the same extent as if set forth fully herein.

WHEREAS, the Principal intends to submit, or has submitted to the Obligee, a Bid for the Principal to perform work for the Obligee, designated as:

(hereinafter called the "Project") and,

WHEREAS, the Principal desires to provide this Bid Bond in lieu of a certified check or cash escrow otherwise required to accompany the Principal's Bid.

NOW THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT, if the Bid be accepted by the Obligee, and if the Principal shall, within ten days after the date of receipt of a written Notice of Award from the Obligee or any agency or department thereof, (i) execute a Contract in accordance with the Bid and upon the terms, conditions and price set forth therein, in the form and manner required by the Obligee, (ii) execute a sufficient and satisfactory Performance Bond in the amount of 100% of the total Contract Sum and a sufficient and satisfactory Payment Bond in the amount of 100% of the total Contract Sum, each payable to the Obligee, on a form prescribed by Obligee and with a surety satisfactory to Obligee, and (iii) provide the Obligee with copies of all required insurance policies, then this obligation is to be void; otherwise this obligation shall be and remain in full force and in the event of the failure of any or all of the foregoing requirements to be satisfied within the time period specified above, the Principal and the Surety immediately shall pay to the Obligee, upon demand, the lesser of: (a) the amount hereof and (b) the difference between the Bid and the next low bid for the Project, in each case in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

Based upon the Surety's present knowledge and information, the Surety knows of no reason why it would not issue payment and performance bonds on behalf of the Principal for the above-referenced Project. The foregoing statement shall not be construed as a commitment on the part of the Surety to issue either or both of such bonds on behalf of the Principal.

The obligations evidenced hereby shall constitute the joint and several obligations of the Principal, the Surety, and their respective successors and permitted assigns.

Unless the context requires otherwise, capitalized terms not otherwise defined in this Bond shall have the meanings assigned to them in the Contract Documents.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, we have hereunto set our signatures and seals this ___ day of _____, 20___ all pursuant to due authorization.

(SEAL)

Principal _____

By: _____

Name: _____

Title: _____

Address: _____

(SEAL)

Surety _____

By: _____

Attorney-in-Fact (Attach Copy of Power of Attorney)

Name: _____

Title: _____

Address: _____

Countersigned for the Commonwealth of Virginia:

By: _____

Resident Agent

Address: _____

END OF SECTION

SECTION 00302

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ of (hereinafter called the "Principal"), and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in the Commonwealth of Virginia as a surety (hereinafter called the "Surety"), are held and firmly bound unto the FAIRFAX COUNTY SCHOOL BOARD (hereinafter called the "Obligee") in the sum of _____ Dollars (\$ _____) lawful money of the United States of America for the payment of which well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally and firmly by these presents, to perform all Work in accordance with the requirements of the Contract Documents for the Project.

WHEREAS, the Principal has entered into a certain written agreement with the Obligee, dated as of the ____ day of _____, 20____, (hereinafter called the "Contract"), for _____, which Contract is by reference made a part hereof;

WHEREAS, the Principal is obligated to furnish security with respect to its obligation to perform the work to be performed under the Contract; and

WHEREAS, the Principal desires to furnish this Performance Bond in lieu of a certified check or cash escrow otherwise required to be provided to the Obligee.

NOW THEREFORE, THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, if the Principal and its successors or assigns, or any of them shall:

Well and truly and in good, sufficient, and workmanlike manner perform or cause to be performed the Contract, and each and every of the covenants, promises, agreements, warranties, and provisions to be performed by the Principal set forth therein, in strict conformity with the plans and specifications, and complete the same within the time period specified therein, all as may be amended from time to time by the parties thereto, and fully indemnify and save harmless the Obligee from all costs and damages which it may suffer by reason of the Principal's failure to do so and fully reimburse and repay the Obligee all costs and expenses which it may incur in making good any such default, then these obligations shall be null and void, otherwise they shall remain in full force and effect.

PROVIDED, HOWEVER, that this bond is subject to the following conditions and limitations:

- (a) In no event shall the Surety, or its successors or assigns be liable hereunder for a greater sum than the amount of this bond.
- (b) No action on this bond shall be brought unless within one year after: (i) completion of the Contract, including the expiration of all warranties and

guarantees; or (ii) discovery of the defect or breach of warranty, if the action be for such, in all other cases.

The Surety, for value received, on behalf of itself and its successors and assigns, hereby stipulates and agrees that the obligations of the Surety and of its successors and assigns under this bond shall not in any manner be impaired or affected by: (a) any extension of time, modification, omission, addition or amendment of or to the Contract or the work to be performed thereunder; (b) any payment thereunder before the time required therein; (c) any waiver of any provision thereof; or (d) any assignment, subletting or other transfer of all or of any part thereof or of any work to be performed or of any moneys due or to become due thereunder; and the Surety, for itself and its successors and assigns, does hereby waive any right to receive notice of any and all of such extensions, modifications, omissions, additions, amendments, payments, waivers, assignments, subcontracts and transfers.

The Surety hereby stipulates and agrees that, in the event that the Obligee declares the Principal to be in default, the Surety will promptly, at the Obligee's election: (a) perform and complete the work to be performed under the Contract in accordance with the terms, conditions and covenants set forth therein with a duly licensed and qualified contractor designated by Obligee; (b) obtain bids from qualified contractors for completing the work to be performed under the Contract in accordance with the terms, conditions and covenants set forth therein and, upon determination by the Obligee and the Surety of the lowest responsible and responsible bidder, (i) arrange for a contract between such bidder and the Obligee and (ii) make funds available directly to the Obligee, or to such contractor(s) as the Obligee shall designate, to pay the costs of completion less the balance of the contract price as such may have been adjusted by change order (such amount, including other costs and damages for which the Surety may be liable hereunder, not to exceed the penal sum set forth in the first paragraph hereof); or (c) remedy the default. The Surety further stipulates and agrees that, within 45 days after its receipt of written notice from the Obligee specifying the Obligee's election of (a), (b) or (c) above, the Surety shall have resumed performance of the work or shall have caused the performance of the work to have been resumed, in accordance with the Obligee's election. In the event the Surety fails to resume the Work within such 45-day period, the Obligee may elect to perform or arrange for the performance of the Work at the sole cost and expense of the Surety in addition to any other rights and remedies available to Obligee. As employed herein, the phrases (i) "balance of the contract price" shall mean the total amount payable by the Obligee to the Principal under the Contract after all proper adjustments have been made, less the aggregate of all amounts paid by the Obligee to the Principal thereunder and (ii) "resume the Work" shall mean the commencement and diligent performance of actual work activities at the site, as demonstrated by discernable daily progress at the rate contemplated by the Contract. All payments to be made by the Surety hereunder shall be paid within thirty (30) days after the Surety's receipt of a request or demand therefor.

The Obligee's omission to call upon the Surety in any instance shall in no event release the Surety from any obligation hereunder.

All notices, requests, demands and other communications which are provided hereunder, shall be in writing and shall be deemed to have been duly given upon the hand delivery thereof during business hours, or upon the earlier of receipt or three (3) days after posting by registered mail or certified mail, return receipt requested, or on the next business day following delivery to

a reliable overnight delivery service, if to the Principal or the Obligee, to the addresses set forth in the Contract, and if to the Surety, to the address set forth beneath its signature.

The obligations evidenced hereby shall constitute the joint and several obligations of the Contractor, the Surety, and their respective heirs, executors, administrators, successors and assigns.

Unless the context requires otherwise, capitalized terms not otherwise defined in this Bond shall have the meanings assigned to them in the Contract Documents.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, the Principal and Surety have caused this Performance Bond to be signed and sealed by their duly authorized representatives as of the ____ day of _____, 20__.

(SEAL)

Principal _____

By: _____

Name: _____

Title: _____

Address: _____

Surety _____

(SEAL)

By: _____

Attorney-in-Fact (Attach Copy
of Power of Attorney)

Name: _____

Title: _____

Address: _____

Countersigned for the
Commonwealth of Virginia:

By: _____
Resident Agent

Address: _____

END OF SECTION

SECTION 00303

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____ of (hereinafter called the "Principal"), and _____, a corporation created and existing under the laws of the State of _____, and having its principal office in the City of _____ and authorized to transact business in the Commonwealth of Virginia as Surety (hereinafter called the "Surety") are held and firmly bound unto FAIRFAX COUNTY SCHOOL BOARD (hereinafter called the "Obligee" in the sum of Dollars (\$_____) lawful money of the United States of America, for the payment of which well and truly to be made, the said Principal binds itself and its successors and assigns, and the said Surety binds itself and its successors and assigns, all jointly and severally, firmly by these presents to pay for all labor performed and material furnished in accordance with the Contract Documents for the Project.

WHEREAS, the Principal has entered into a certain written agreement with the Obligee, dated as of the ____ day of _____, 20____ (hereinafter called the "Contract"), for _____, which Contract is by reference made a part hereof.

WHEREAS, the Principal is obligated to furnish security with respect to its obligation to pay for all labor performed and material furnished pursuant to the Contract; and

WHEREAS, the Principal desires to furnish this Payment Bond in lieu of a certified check or cash escrow otherwise required to be provided to the Obligee.

NOW, THEREFORE, THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH THAT, if the Principal and its successors or assigns, or any or either of them shall:

Pay or cause to be paid the wages and compensation for labor performed and services rendered of all persons engaged in the prosecution of the work provided for therein, whether such persons be agents, servants or employees of the Principal, and of its successors or assigns, or of any subcontractor or any assignee thereof, including all persons so engaged who perform the work of laborers or of mechanics regardless of any contractual relationship between the Principal, or its assigns, or any subcontractor or any assignee thereof, and such laborers or mechanics, but not including office employees not regularly stationed at the site of the work, and further, shall pay or cause to be paid all lawful claims of subcontractors and of materialmen and other third persons arising out of or in connection with the Contract and the work, labor, services, supplies and materials furnished in and about the performance and completion thereof, then these obligations shall be null and void, otherwise they shall remain in full force and effect.

PROVIDED, however, that this bond is subject to the following conditions and limitations:

- a. All persons who have performed or rendered services, as aforesaid, all subcontractors, and all persons, firms, corporations, including materialmen and third persons, as aforesaid, furnishing work, labor, services, supplies and material under or in connection with the Contract or in or about the performance

and completion thereof, shall have a direct right of action (subject to the prior right of the Obligee under any claim which it may assert against the Principal and its successors, and assigns and/or the Surety and its successors and assigns) against the Principal and its successors, and assigns and/or the Surety and its successors and assigns on this bond, which right of action shall be asserted in proceedings instituted in the State in which such work, labor, services, supplies or material was performed, rendered or furnished, or where work, labor, services, supplies or material has been performed, rendered or furnished, as aforesaid, in more than one State, then in any such State. Insofar as permitted by the laws of such State, such right of action shall be asserted in a proceeding instituted in the name of the Obligee to the use and benefit of the person, firm or corporation instituting such action and of all other persons, firms and corporations having claims hereunder, and any other person, firm or corporation having a claim hereunder shall have the right to be made a party to such proceedings (but not later than one year after the performance of the Contract including the expiration of any warranty or guarantee) and to have such claim adjudicated in such action and judgment tendered thereof. Prior to the institution of such a proceeding by a person, firm or corporation in the name of the Obligee, as aforesaid, such person, firm or corporation shall furnish the Obligee with a bond of indemnity for costs, which bond shall be in a form and in an amount satisfactory to the Obligee.

- b. Neither the Surety nor its successors or assigns shall be liable hereunder for any damages or compensation recoverable under any worker's compensation or employer's liability statute.
- c. In no event shall the Surety, or its successors or assigns be liable hereunder for a greater sum than the amount of this bond, or subject to any suit, action or proceeding thereon that is instituted by any person, firm or corporation under the provisions of the above section(s), later than one year after such person last performed labor or last furnished or supplied materials.

And the Surety, for value received, for itself and its successors and assigns, hereby stipulates and agrees that the obligations of the Surety and of its successors and assigns, and this bond shall in no way be impaired or affected by any extension of time, modification, omission, addition or change in or to the Contract or the work to be performed thereunder, or by any payment thereunder before the time required therein, or by a waiver of any provision thereof, or by an assignment, subletting or other transfer thereof, or of any part thereof, or of any work to be performed or of any moneys due or to become due thereunder; and the Surety, for itself and its successors and assigns, does hereby waive notice of any and all of such extensions, modifications, omissions, additions, changes, payments, waivers, assignments, subcontracts and transfers, and hereby stipulates and agrees that any and all things done and omitted to be done by and in relation to executors, administrators, successors, assignees, subcontractors, and other transferees, shall have the same effect as to the Surety and its successors and assigns, as though done or omitted to be done by and in relation to the Principal.

The Principal, for itself and its successors and assigns, and the Surety, for itself and its successors and assigns, do hereby expressly waive any objection that might be interposed as to the right of the Obligee to require a bond containing the foregoing provisions, and they do

hereby further expressly waive any defense which they or either of them might interpose to an action brought hereon by any person, firm, or corporation, including subcontractors, materialmen and third persons, for work, labor services, supplies or material, performed, rendered or furnished as aforesaid, upon the ground that there is no law authorizing the Obligee to require the foregoing provisions to be placed in this bond.

Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Principal shall promptly furnish a copy of this Bond or shall permit a copy to be made on behalf of such potential beneficiary.

The obligations evidenced hereby shall constitute the joint and several obligations of the Contractor, the Surety, and their respective heirs, executors, administrators, successors and assigns.

Unless the context requires otherwise, capitalized terms not otherwise defined in this Bond shall have the meanings assigned to them in the Contract Documents.

[SIGNATURES ON FOLLOWING PAGE]

IN WITNESS WHEREOF, we have hereunto set our signatures and seals this __ day of _____, 20__ all pursuant to due authorization.

(SEAL)

Principal _____

By: _____

Name: _____

Title: _____

Address: _____

Surety _____

(SEAL)

By: _____

Attorney-in-Fact (Attach Copy of Power of Attorney)

Name: _____

Title: _____

Address: _____

Countersigned for the Commonwealth of Virginia:

By: _____

Resident Agent

Address: _____

END OF SECTION

SECTION 00700

GENERAL CONDITIONS - TABLE OF CONTENTS

PART 1 - DEFINITIONS	1
1.01 ARCHITECT	1
1.02 CHANGE ORDER.....	1
1.03 CONSTRUCTION SCHEDULE	1
1.04 CONTRACT OR CONTRACT DOCUMENTS	1
1.05 CONTRACT PERIOD	2
1.06 CONTRACT SUM.....	2
1.07 CONTRACTOR.....	2
1.08 CRITICAL PATH	2
1.09 DATE OF FINAL COMPLETION	2
1.10 DATE OF SUBSTANTIAL COMPLETION	2
1.11 DAY.....	2
1.12 DEFECTIVE.....	2
1.13 DIRECTOR, OFFICE OF FACILITIES MANAGEMENT.....	2
1.14 FLOAT	2
1.15 LAWS AND/OR REGULATIONS.....	2
1.16 NOTICE.....	3
1.17 NOTICE TO PROCEED	3
1.18 OVERHEAD.....	3
1.19 OWNER.....	3
1.20 PREVAILING WAGE RATE	3
1.21 PROJECT	3
1.22 SEPARATE CONTRACTOR.....	3
1.23 SHOP DRAWINGS.....	3
1.24 SITE	3
1.25 SUBCONTRACTOR.....	4
1.26 SUBMITTAL SCHEDULE	4
1.27 SUB-SUBCONTRACTOR.....	4
1.28 SURETY.....	4
1.29 WORK.....	4

PART 2 - EXECUTION AND INTENT OF THE CONTRACT	4
2.01 EXECUTION OF CONTRACT DOCUMENTS	4
2.02 FAMILIARITY WITH SITE	4
2.03 ORDER OF PRECEDENCE	4
2.04 DIVISION OF WORK	5
2.05 CONTRACT INTERPRETATIONS.....	5
2.06 COPIES AND OWNERSHIP OF DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS	6
PART 3 - ARCHITECT	6
3.01 CONTRACT ADMINISTRATION	6
3.02 OWNER'S REPRESENTATIVE	6
3.03 OBSERVATION OF WORK	6
3.04 PAYMENT CERTIFICATIONS.....	6
3.05 INTERPRETATION OF CONTRACT DOCUMENTS.....	7
3.06 REJECTION OF WORK	7
3.07 PREPARATION OF CHANGE ORDERS; REVIEW OF SUBMITTALS	7
3.08 NO CONTRACTUAL RELATIONSHIP	7
3.09 OWNERSHIP OF DRAWINGS AND SPECIFICATIONS	7
PART 4 - THE OWNER	7
4.01 OWNER REPRESENTATIVE	7
4.02 REJECTION OF WORK	7
4.03 COMPLETION AND CORRECTION OF WORK	7
4.04 REVIEW OF PAYMENT APPLICATIONS	7
4.05 RIGHT TO SUPPLEMENT CONTRACTOR'S WORK FORCE.....	8
4.06 NO DISCRIMINATION AGAINST FAITH-BASED ORGANIZATIONS	8
PART 5 - CONTRACTOR	8
5.01 GENERAL DUTIES AND OBLIGATIONS.....	8
5.02 CHARACTER AND COMPETENCY	10
5.03 PERMITS, FEES AND NOTICES	11

5.04	RESPONSIBILITY FOR THOSE PERFORMING THE WORK.....	12
5.05	DRAWINGS AND SPECIFICATIONS AT THE SITE	12
5.06	CONSTRUCTION SCHEDULE	12
5.07	SHOP DRAWINGS.....	12
5.08	INSPECTIONS OF WORK IN PLACE.....	13
5.09	REQUIRED TESTS AND INSPECTIONS.....	13
5.10	USE OF SITE	14
5.11	INDEMNIFICATION.....	14
5.12	CONFLICT OF INTEREST	15
5.13	NON-DISCRIMINATION	15
5.14	SUBCONTRACTOR BONDS.....	16
5.15	SAFETY AND HEALTH PROGRAM.....	16
5.16	PREVAILING WAGE REQUIREMENTS	16
5.17	DRUG-FREE WORKPLACE REQUIREMENT	17
PART 6 - SUBCONTRACTORS		17
6.01	ABSENCE OF CONTRACTUAL RELATIONSHIP	17
6.02	AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK.....	17
6.03	SUBCONTRACTOR AND SUB-SUBCONTRACTOR AGREEMENTS.....	18
6.04	PAYMENTS TO SUBCONTRACTORS.....	19
PART 7 - SEPARATE CONTRACTS.....		20
7.01	OWNER'S RIGHT TO AWARD SEPARATE CONTRACTS	20
7.02	COVENANT TO COORDINATE AND COOPERATE	20
7.03	NO INTERFERENCE WITH SEPARATE CONTRACTORS.....	21
7.04	SCHEDULING WITH SEPARATE CONTRACTORS.....	21
7.05	REPORT OF DISCREPANCIES	21
PART 8 - MISCELLANEOUS PROVISIONS		21
8.01	GOVERNING LAW.....	21
8.02	SUCCESSORS, ASSIGNS AND LEGAL REPRESENTATIVES.....	21
8.03	ENTIRE AGREEMENT	21

8.04	ROYALTIES AND PATENTS.....	22
8.05	CONTRACTUAL CLAIMS	22
8.06	TESTS AND INSPECTIONS.....	22
8.07	CONFLICT WITH PROVISIONS OF LAWS OR REGULATIONS.....	23
8.08	NO CLAIMS AGAINST INDIVIDUALS.....	23
8.09	DISPUTES	23
8.10	BENEFIT OF AGREEMENT	24
8.11	NO ESTOPPEL.....	25
8.12	NO WAIVER OF RIGHTS	25
PART 9 - CHANGES IN THE WORK.....		25
9.01	MINOR CHANGES	25
9.02	EXTRA WORK	26
9.03	OMITTED WORK.....	28
9.04	SUSPENSION OF WORK.....	28
9.05	AUDIT.....	28
PART 10 - CHANGE ORDER PROCEDURES		29
10.01	DEFINITIONS.....	29
10.02	CHANGE ORDERS.....	29
PART 11 - TIME.....		29
11.01	TIME OF START AND COMPLETION; LIQUIDATED DAMAGES	29
11.02	EXTENSION OF TIME.....	30
PART 12 - PAYMENTS AND COMPLETION.....		33
12.01	PRICES	33
12.02	SUBMISSION OF SCHEDULE OF VALUES	33
12.03	PARTIAL PAYMENTS	34
12.04	SUBSTANTIAL COMPLETION	36
12.05	FINAL INSPECTION	38
12.06	FINAL PAYMENT REQUEST	39
12.07	EFFECT OF FINAL PAYMENT	39

PART 13 - PROTECTION OF PERSONS AND PROPERTY39

13.01 SAFETY PROGRAM.....39

13.02 USE OF EXPLOSIVES40

13.03 PROTECTION OF WORK.....40

13.04 SAFETY REPRESENTATIVE.....40

13.05 STRUCTURAL OVERLOAD40

PART 14 - INSURANCE.....40

14.01 CONTRACTOR'S STATUTORY AND LEGAL LIABILITY INSURANCE40

14.02 PROPERTY INSURANCE.....43

14.03 NOTICE OF INSURANCE.....44

14.04 NOTICE OF CANCELLATION.....44

14.05 COPIES OF INSURANCE POLICIES44

14.06 NO WAIVER44

PART 15 - CONTRACT SECURITY.....44

15.01 CONTRACT SECURITY.....44

PART 16 - UNCOVERING AND CORRECTION OF WORK45

16.01 UNCOVERING OF WORK.....45

16.02 CORRECTION OF WORK.....45

16.03 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK.....46

PART 17 - CONTRACTOR'S DEFAULT & TERMINATION46

17.01 OWNER'S RIGHT AND NOTICE46

17.02 CONTRACTOR'S DUTY UPON DEFAULT47

17.03 COMPLETION OF WORK AFTER DEFAULT47

17.04 PARTIAL DEFAULT48

17.05 OWNER'S RIGHT TO TERMINATE FOR CAUSE.....48

17.06 OWNER'S RIGHT TO TERMINATE FOR CONVENIENCE.....49

PART 18 - MISCELLANEOUS SPECIAL CONDITIONS49

18.01 LAYING OUT WORK49

18.02 INSPECTION AND APPROVAL OF SITE IMPROVEMENTS50

18.03 PARTIAL USE OR OCCUPANCY.....50

18.04 RELEASE OF BONDS50

18.05 NO ASBESTOS50

SECTION 00700

GENERAL CONDITIONS

PART 1 - DEFINITIONS

- 1.01 Architect. The duly licensed individual or entity who has been engaged by the Owner to create the contract documents. As employed herein, the term "Architect" may refer to an individual, an organization or to the Architect's authorized representative.
- 1.02 Change Order. A written order to the Contractor signed by the Owner and the Contractor, which authorizes a change in the Work, an adjustment to the Contract Sum, and/or an adjustment to the Contract Period. The latest edition of AIA Standard Form G701 shall be utilized.
- 1.03 Construction Schedule. The schedule for completion of the Work. The Construction Schedule shall be developed utilizing a Critical Path method of scheduling, indicating time periods allotted for the performance of all constituent parts of the Work within the Contract Period.
- 1.04 Contract or Contract Documents. The terms "Contract" and "Contract Documents" shall be used interchangeably herein and shall consist of the following:
- A. The signed Agreement;
 - B. The General Conditions of the Contract, which appear herein;
 - C. The Drawings and Specifications;
 - D. The Supplementary Conditions;
 - E. Any Addenda issued prior to execution of the Agreement;
 - F. The Notice of Award issued by the Owner to the Contractor;
 - G. The Notice to Proceed issued by the Owner to the Contractor;
 - H. Any modifications which are issued subsequent to the execution of the Agreement and which may take the form of a Work Order, a Change Order, or written interpretations issued by the Architect;
 - I. The Contractor's Payment and Performance Bonds;
 - J. The Bidding Documents, which shall include the Contractor's completed Bid Proposal Form and the Instructions to Bidders; and
 - K. All provisions required by Law or Regulation to be incorporated herein, regardless of whether any such provision is referred to or set forth expressly in these Contract Documents.

- 1.05 Contract Period. The period of time allotted in the Contract Documents for completion of the Work, as such period may be adjusted from time to time in the manner prescribed herein.
- 1.06 Contract Sum. The total amount payable to the Contractor for performance of the Work. The Contract Sum is stated in the Contract Documents and shall be subject to adjustments in the manner specified herein.
- 1.07 Contractor. The corporation, limited liability company, partnership or other person or entity that contracts with the Owner to perform the Work. As employed herein, the term "Contractor" may refer to an individual, an organization, or to the Contractor's authorized representative.
- 1.08 Critical Path. The logical and necessary sequence through which all Work items must be completed within their respective timeframes or the completion date for the Project will change. A delay in the completion of any Work item that is on the Critical Path necessarily causes a corresponding delay to the Date of Substantial Completion.
- 1.09 Date of Final Completion. The date upon which the Work is completely finished, which event shall be achieved by the Contractor within the time period specified in Section 01010, Summary of Work.
- 1.10 Date of Substantial Completion. The date upon which the Work has been sufficiently completed to allow the Work to be utilized by the Owner for the purpose for which it was intended. Such event shall be achieved by the Contractor within the time period specified in Section 01010, Summary of Work.
- 1.11 Day. The term "day" shall mean "calendar day."
- 1.12 Defective. An item described herein as "defective" shall be deemed to be unsatisfactory, faulty, or deficient in that it does not conform to the requirements of the Contract Documents, or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to the Date of Final Completion of the Work (unless responsibility for the protection thereof has been assumed by the Owner as of an earlier date).
- 1.13 Director, Office of Facilities Management. The official in charge of day-to-day construction matters for the Owner. The Director may designate a representative to act on his or her behalf.
- 1.14 Float. The period of time between the early start date and the late start date, or the early finish date and the late finish date of any of the activities set forth on the Construction Schedule. The Owner shall have and retain exclusive ownership of the Float.
- 1.15 Laws and/or Regulations. Any and all laws, rules, regulations, ordinances, codes, and/or orders of any and all governmental bodies, agencies, authorities, and/or courts, which are applicable to the Work (or any aspect thereof) and are in effect at any time or from time to time during the Contract Period.

- 1.16 Notice. Notice shall mean written notice. Written notice shall be deemed to have been duly served on the Contractor if delivered by U.S. Mail, hand delivery, or facsimile transmission to the Contractor's office at the Project or to the business address or fax number of the Contractor as stated in its Bid Form Proposal; or if delivered in person to the Contractor, to the Contractor's foreman or superintendent for the Project, or any officer or director of the Contractor. Unless otherwise specified herein, Notice shall be deemed to have been duly served on the Owner if delivered by U.S. Mail, hand delivery, or facsimile transmission (with a duplicate copy transmitted by another means of delivery authorized hereunder) to the Office of Facilities Management, Fairfax County Public Schools, Sideburn Support Center, 5025 Sideburn Road, Room 16, Fairfax, Virginia 22032, fax number (703) 239-0462.
- 1.17 Notice to Proceed. A written notice from the Owner to the Contractor, which gives consent for commencement of the Work. Unless otherwise provided, Work shall commence on the date specified in the Notice to Proceed.
- 1.18 Overhead. All costs of administration, field office and home office costs (including extended costs), general superintendence, office engineering and estimating costs, other required insurance, materials used in temporary structures (not including form work), additional premiums on the Performance and Payment Bonds of the Contractor, the use of small tools, scheduling costs, cumulative impact costs and all other costs incidental to the performance of a change in the Work or to the cost of doing business. Small tools are defined as any tool with a replacement value less than \$1,000.
- 1.19 Owner. The School Board of Fairfax County, Virginia, its authorized representatives and employees.
- 1.20 Prevailing Wage Rate. The rate, amount, or level of wages, salaries, benefits and other remuneration prevailing for the corresponding classes of mechanics, laborers, or workers employed for the same work in the same trade or occupation in the locality in which the Project is located, as determined by the Commissioner of Labor and Industry.
- 1.21 Project. The entire improvement of which this Contract and the Work contemplated hereby forms a part. The Project may include construction and/or other activities that are to be performed by the Owner or by one or more Separate Contractors.
- 1.22 Separate Contractor. Any corporation, limited liability company, partnership or other person or entity that contracts with the Owner to perform one or more portions of the Project, other than the Work.
- 1.23 Shop Drawings. All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for the Contractor and are submitted by the Contractor to illustrate a portion of the Work. Shop Drawings are not Contract Documents.
- 1.24 Site. The area upon or in which the Contractor's operations are performed and such other areas adjacent thereto as may be designated as such by the Owner. The Site

may be shared by the Contractor with the Owner and with Separate Contractors and their subcontractors.

- 1.25 Subcontractor. Any corporation, limited liability company, partnership or other person or entity, other than an employee of the Contractor, who contracts with the Contractor to furnish or who actually furnishes labor, materials, services or equipment, or any combination thereof to the Contractor in connection with the Work.
- 1.26 Submittal Schedule. A schedule for submission to the Owner of all required shop drawings, equipment data, and the like, which reflects lead times of critical submittals and is coordinated with the Construction Schedule for timely progress.
- 1.27 Sub-Subcontractor. Any corporation, limited liability company, partnership or other person or entity, other than an employee of a Subcontractor, who contracts with a Subcontractor to furnish, or who actually furnishes labor, materials, service or equipment, or any combination thereof to a Subcontractor in connection with the Work.
- 1.28 Surety. Any entity that has executed as Surety the Contractor's performance and/or payment bonds securing performance of the Work contemplated by this Contract and/or providing for protection of claimants who have and fulfill contracts to supply labor or materials to the Contractor in connection with the Work.
- 1.29 Work. Everything explicitly or implicitly required to be furnished or performed under the Contract Documents. The Work may represent the whole, or a necessary and interdependent part of, the Project.

Number and Gender of Words. Whenever the Contract so admits or requires, all references to one number shall be deemed to extend to and include the other number, whether singular or plural, and the use of any gender shall be applicable to all genders.

PART 2 - EXECUTION AND INTENT OF THE CONTRACT

- 2.01 Execution of Contract Documents. Four (4) copies of the Contract Documents shall be signed by both the Owner and the Contractor.
- 2.02 Familiarity with Site. The Contractor's execution of the Agreement shall constitute a representation that the Contractor has visited the Site, become familiar with local conditions under which the Work is to be performed, and correlated personal observations with the requirements of the Contract Documents.
- 2.03 Order of Precedence. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work, including without limitation, all labor, materials, equipment and furnishings required in connection therewith. The Contract Documents are complimentary, and what is required by one shall be as binding as if required by all. In the event of any conflict, error or ambiguity in or among the various Contract Documents, such documents shall be accorded the following order of precedence:

Change Orders
Notice to Proceed
Notice of Award
Addenda
Supplementary Conditions
General Conditions
Agreement
Instructions to Bidders
Drawings and Specifications
Payment and Performance Bonds
Bid Form

Except as otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

- A. the provisions of any standard, specification, manual, or code of any technical society, organization or association (whether or not specifically incorporated by reference in the Contract Documents); or
- B. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

2.04 Division of Work. The subdivision of the Drawings and Specifications into divisions, sections and articles is for the purpose of ease of reference only and shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. The Contractor shall be responsible for segregating the Work among the various trades, if necessary or desirable in its discretion.

- A. The Specifications shall serve to amplify the requirements of materials and methods. The mention in any section of the Specifications of any article or operation requires that the Contractor shall provide all such items indicated on, or reasonably inferred from, the Drawings, furnishing for such purpose all labor, materials and equipment required in connection therewith. Omission of any article or operation does not relieve the Contractor of the responsibility for completion of the Work intended by the Drawings and Specifications to be included in the Contract.

2.05 Contract Interpretations. The Owner or the Contractor may request contract interpretations in writing from the Architect. Such requests for interpretations must be submitted sufficiently in advance of the date upon which the interpretation is actually required by the Owner or the Contractor to allow the Architect to issue the interpretation so as not to delay the progress of the Work. Written interpretations so requested shall be issued by the Architect in a manner commensurate with the timely execution of the Work, shall be consistent with the intent of the Contract Documents, and shall be in accordance with established progress schedules.

2.06 Copies and Ownership of Drawings, Specifications and Other Documents.

- A. The Contractor will be furnished **only one (1) set** of Drawings, Specifications and other documents prepared by the Architect (the "Architect's Documents") free of charge. Additional sets may be purchased by the Contractor at the cost of reproduction.
- B. Neither the Contractor nor any Subcontractor or supplier or other person or organization performing or furnishing any of the Work:
 - 1. shall have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the Architect's seal; or
 - 2. shall reuse any of such Drawings, Specifications, other documents, or copies on extensions of the Project or any other project without written consent of the Owner and the Architect.

PART 3 - ARCHITECT (Not retained for construction administration for this project. See OWNER).

- 3.01 **Contract Administration.** The Architect shall provide administration of the Contract in accordance with the Contract Documents and the Agreement between the Owner and the Architect.
- 3.02 **Owner's Representative.** The Architect shall serve as the Owner's representative during construction, until final payment is due, and with the Owner's concurrence, from time to time during the Correction Period described in Paragraph 12.05(B). The Architect shall advise and cooperate with the Owner and shall act on the Owner's behalf in accordance with the Contract Documents. The Owner shall issue instructions to the Contractor or, at its option, elect to have the Architect issue instructions to the Contractor.
- 3.03 **Observation of Work.** The Architect shall have access to the Work and shall visit the Site periodically in order to determine the progress of the Work and to assess the quality of the completed Work. Based upon its on-site evaluations, the Architect will advise the Owner of the progress of the Work and will endeavor to guard the Owner against defects and deficiencies in the Work. The Architect shall not have control over or charge of and shall not be responsible for construction methods, techniques, procedures, sequences or safety measures employed in connection with the Work. The Architect shall not be responsible for the failure of the Contractor, Subcontractors, or Sub-subcontractors to perform the Work in accordance with the Contract Documents.
- 3.04 **Payment Certifications.** Based upon the Architect's observations and evaluations of the Contractor's Applications for Payment, the Architect shall review and certify the amounts due the Contractor. The Architect may, in its discretion, revise the applications for payment to show the actual value of Work completed in accordance with the Architect's observations of the Work. The Contractor agrees to be bound by the Architect's revisions to the applications for payment.

- 3.05 Interpretation of Contract Documents. The Architect shall interpret the Contract Documents in accordance with Paragraph 2.05 and shall serve as the impartial judge of the performance of the Work.
- 3.06 Rejection of Work. The Architect and/or the Owner shall have the authority to reject Work that is defective or that otherwise does not conform to the requirements of the Contract Documents. The Architect and/or the Owner shall have the authority to order special inspections or tests, regardless of whether or not the Work has been fabricated, installed or completed. No responsibility or duty of the Architect and/or the Owner to the Contractor, Subcontractors, or Sub-subcontractors shall be created by this authority or by good faith decisions rendered in the exercise of this authority.
- 3.07 Preparation of Change Orders; Review of Submittals. The Architect shall prepare Change Orders, shall perform inspections to determine the Dates of Substantial and Final Completion, shall review all required documents submitted by the Contractor, and shall issue Certificates of Substantial Completion and Final Payment in accordance with the provisions of Paragraphs 12.04 and 12.05.
- 3.08 No Contractual Relationship. No contractual relationship shall exist or be deemed to exist between the Architect and the Contractor.
- 3.09 Ownership of Drawings and Specifications. Original Drawings and Specifications are the property of the Architect. Notwithstanding such fact, however, the Project is the property of the Owner, and the Architect may not use the Drawings and Specifications for any purpose not relating to the Project without the Owner's consent. The Owner shall be furnished with such reproductions of Drawings and Specifications as the Owner may reasonably require. Upon completion of the Work or any earlier termination of the Agreement pursuant to Part 17, the Architect will revise the Drawings to reflect changes made during construction and the Architect will promptly furnish the Owner with one complete set of reproducible record prints. All such reproductions shall be the property of the Owner who may use them without the Architect's permission for other projects, for additions to this Project, and/or for completion of this Project by others.

PART 4 - THE OWNER

- 4.01 Owner Representative. The Owner shall provide one or more representatives to observe the Work; provided, however, that the presence of the Owner's representatives shall in no way constitute an approval of means, methods or materials which do not conform to the requirements of the Contract Documents.
- 4.02 Rejection of Work. The Owner shall have the right to reject Work in accordance with Paragraph 3.06.
- 4.03 Completion and Correction of Work. The Owner shall have the right to complete or correct the Work in accordance with Paragraphs 4.05 and 12.05(D).
- 4.04 Review and Approval of Payment Applications. The Owner shall have the right to review, revise, and approve the applications for payment.

- 4.05 **Right to Supplement Contractor's Work Force.** In the event that the Contractor fails (in the opinion of the Owner) within 3 days following Notice from the Owner: (a) to correct defective Work; or (b) to supply labor, materials, or equipment that is necessary to complete the Work in strict accordance with the requirements of the Contract Documents, then the Owner shall have the right to (i) order the Contractor to stop the Work or a designated portion thereof; and/or (ii) supplement the Contractor's forces, in each case to the extent deemed necessary and advisable by the Owner and until such time as, in the opinion of the Owner, the cause of the order or action shall have been corrected. The Owner shall have the right to: (a) correct the deficiencies set forth in the Notice, either with its own forces or with a separate contractor engaged by the Owner to perform such corrections; (b) deduct the cost of correcting such deficiencies (including costs for additional services in connection therewith) from amounts then or thereafter due the Contractor under the Contract Documents; and (c) order the Contractor to re-start at a designated time all or any portion of the Work stopped by the Owner. If the amounts then or thereafter due the Contractor are insufficient to cover the cost of correcting the deficiencies, then the difference shall be payable by the Contractor to the Owner upon written demand. The Architect's determination of cost hereunder shall be final and binding upon the parties. The Owner's exercise of the right to correct deficiencies shall be in addition to, and shall in no way prejudice or limit, any other remedies available to the Owner. In the event that it is determined for any reason that grounds for stopping all or any portion of the Work did not exist, then, at the election of the Owner, the rights and obligations of the parties hereunder shall be the same as if the Notice directing the Contractor to stop the Work had been delivered under the provisions of Paragraph 17.06 hereof; provided, however, that the Contractor in such event shall be deemed to have received seven days prior written Notice of termination. Any compensation determined to be due the Contractor pursuant to Paragraph 17.06 shall be offset by the cost of correcting the Work. The Contractor shall in no event be entitled to receive anticipated profits or consequential damages of any kind in connection with any termination or action hereunder.
- 4.06 **No Discrimination Against Faith-Based Organizations.** The Owner does not discriminate against faith-based organizations on the basis of the organization's religious character or impose conditions that (i) restrict the religious character of the faith-based organizations, except as provided by law, or (ii) impair, diminish or discourage the exercise of religious freedom by the recipients of such goods, services or disbursements.

PART 5 - CONTRACTOR

5.01 General Duties and Obligations.

- A. **Contractor Responsibilities.** The Contractor shall perform all the Work and, except as otherwise expressly provided herein, shall furnish, at its own cost and expense, all labor, materials, equipment, and other facilities as may be necessary and proper for performing and completing the Work. The Contractor shall be responsible for the entire Work until completed and finally accepted by the Owner.

- B. **Quality Workmanship.** Unless otherwise provided herein, the Work shall be performed in accordance with the best modern practice and with materials and workmanship of highest quality, all as determined by and entirely to the satisfaction of the Owner.
- C. **Supervision and Construction Procedures.** The Contractor shall supervise and direct the Work and coordinate the Work with that of Separate Contractors, if any, using its best skill and attention. Unless otherwise expressly provided, the Contractor shall be solely responsible for and shall have control over construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract. Unless otherwise expressly provided, the means and methods of construction shall be such as the Contractor may choose; provided, however, that the Contractor shall employ adequate and safe procedures, methods, structures and equipment. Neither the Architect's approval nor its failure to exercise its right of approval shall relieve the Contractor of its obligation to accomplish the result intended by the Contract, nor shall the Architect's approval or failure to approve create a cause of action for damages. Notwithstanding the rights and remedies available to the Owner and the Architect hereunder, including without limitation, their respective rights to monitor the progress of the Work and to accept or retract acceptance of Subcontractors, the Contractor expressly acknowledges and agrees that it is in charge of and in control of the Work.
- D. **Contractor's Review of Documents.** The Contractor shall study and review the Contract Documents and shall compare them with each other and with any information made available by the Owner. If the Contractor finds a conflict, error, ambiguity or discrepancy in or among the Contract Documents, the Contractor shall immediately call it to the attention of the Owner and the Architect in writing before proceeding with the Work affected thereby. The Owner promptly shall resolve the matter in writing. Work performed by the Contractor after issuance of the Notice to Proceed and prior to written resolution thereof by the Owner shall be performed at the Contractor's sole risk.
- E. **Contractor's Verification.** The Contractor shall be responsible for verifying all dimensions, quantities and details set forth in the Contract Documents and shall notify the Owner and the Architect in writing of all errors, omissions, conflicts and discrepancies. The Contractor acknowledges and agrees that all equipment, materials, finishes, and other such listings are provided for the convenience of the Architect and the Contractor and are not guaranteed to be complete. The Contractor hereby assumes all responsibility for the making of estimates of the size, kind, quantity, and quality of materials, supplies and equipment included in Work.
- F. **Differing Site Conditions.** It is the intent of these Contract Documents that the Contractor shall bear full and complete responsibility for all surface and subsurface conditions, whether known or unknown, reasonably foreseeable or not, that shall be encountered during the performance of the Work. Notwithstanding any provision in the Contract Documents to the contrary, the

Contractor shall in no event be entitled to additional compensation, time or other relief from its obligations under the Contract Documents as a direct or indirect result of any surface or subsurface conditions encountered during performance of the Work. Consequently, the Contractor hereby waives any and all claims against the Owner and/or the Architect (and any of their members, officers, employees and authorized representatives) that the Contractor has, or may have in the future, arising out of or in connection with. (i) any surface and subsurface conditions encountered during performance of the Work; and (ii) any inaccurate or incomplete reports, data or other materials or information given to the Contractor by or on behalf of the Owner or the Architect that pertains to the surface or subsurface conditions at the Site of the Project. The Contractor covenants and agrees that it shall not make any claim for additional compensation from the Owner as a result of any such subsurface conditions.

- G. Notice to Owner and Architect. The Contractor shall submit to the Owner and the Architect in writing all items required to be brought to the Owner's and/or Architect's attention or to be submitted for approval. These items must be submitted sufficiently in advance of the date upon which the information or approval is actually required by the Contractor to allow the Owner and Architect to take appropriate actions so as not to delay the Work. The Contractor shall not have any right to an extension of time due to delays caused by its failure to submit any item in a timely fashion.

5.02 Character and Competency.

- A. Certain Representations, Warranties and Covenants. The Contractor represents that it is a duly organized and licensed entity which employs qualified and experienced personnel who specialize in performing the type of construction services required hereunder. The Contractor agrees to provide a sufficient number of personnel who are suitably qualified and experienced and who are in all respects acceptable to the Owner to perform the Work in an efficient and timely manner. The Contractor represents that it is capable in all respects (including the possession of sufficient financial resources to provide fully for the payment of employees) of performing the Work and agrees to provide construction services of high quality. The Contractor agrees to diligently and conscientiously devote its resources to the performance of the Work. The Owner, upon written Notice to the Contractor, and in the Owner's sole discretion, shall have the right to direct the Contractor to remove an employee permanently from the Site for any reason.
- B. Direct Contact Certification. The Contractor hereby certifies that. (i) neither the Contractor nor any employee of the Contractor who will have direct contact with students has been convicted of a felony or any offense involving the sexual molestation or physical or sexual abuse or rape of a child; and (ii) absent prior Notice to the Owner, neither the Contractor nor any employee of the Contractor who will have direct contact with students has been convicted of a crime of moral turpitude. The foregoing certification shall be binding upon the Contractor throughout the Contract Period and the Contractor hereby covenants and agrees

to provide the Owner with immediate Notice of any event or circumstance that renders such certification untrue. The Contractor will ensure that no worker shall perform Work in occupied areas during school hours unless prior written approval has been granted by the Owner and proper safety precautions have been exercised to isolate the area of the Work.

- C. Prohibited Activities; Removal from Site. Alcoholic beverages, illegal drugs, and weapons are prohibited on the Site and shall constitute grounds for immediate removal from the Site of the Project. The Contractor shall ensure that neither its employees nor those of any Subcontractor shall fraternize in any manner with any student of Fairfax County Public Schools at the Site of the Work. The Owner shall have the right to remove from the job Site any person whose presence the Owner deems detrimental to the best interests of the Fairfax County Public Schools. Any individual who is removed from the Site pursuant to this paragraph may not return to such Site or to that of any other project of Owner without the prior written permission of the Director of the Owner's Office Facilities Management.
- D. Contractor's Use of Premises. See Section 01010, Summary of Work, for detailed requirements regarding Contractor's use of premises.

5.03 Permits, Fees and Notices.

- A. Compliance with Laws and Regulations; Required Permits. The Contractor shall comply with all Laws and Regulations and shall obtain, at its expense, all permits, licenses and other authorizations necessary for the prosecution of the Work, except that the Owner shall obtain, at its expense, the General Building Permit and/or any easement agreement necessary and indispensable to the completion of the Project.
- B. Conflict with Laws and Regulations. The Contractor shall be responsible for giving all Notices and complying with all Laws and Regulations. In the event that the Contractor determines that the Contract Documents, or any of them, do not conform in any respect with any Law or Regulation, he shall promptly inform the Architect of such fact in writing. Any required change shall be adjusted by Work Order and incorporated into a subsequent Change Order. If the Contractor performs any Work knowing it to be in conflict with any Law or Regulation without prior notification to the Architect and Owner, the Contractor shall accept all responsibility and bear all costs relating thereto.
- C. VDOT Permits. When applicable, the Contractor shall be responsible for acquiring any Virginia Department of Transportation ("VDOT") permits required for the Project. The Contractor shall be responsible for all application fees, bonding costs and inspection fees associated with such permits. When applicable, the Owner shall pay the Civil Engineer of Record for any costs incurred for additional engineering services required by VDOT in order to obtain these permits.

- 5.04 Responsibility for Those Performing the Work. The Contractor shall be responsible and accountable to the Owner for the acts and omissions of its employees in connection with the performance of the Work and for any Subcontractors or other persons or entities performing any of the Work under a contract with the Contractor or a contract with a Subcontractor.
- 5.05 Drawings and Specifications at the Site. The Contractor shall maintain one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders and other Modifications at the Site of the Project. All of the documents are to be kept in good order and marked to record all changes made during construction. The documents shall be made available to the Owner and Architect during performance of the Work. Upon completion of the Work, the Drawings, together with all changes and revisions made during construction of the Project, shall be delivered to the Architect.
- 5.06 Construction Schedule.
- A. Preparation of Construction Schedule. The Contractor, promptly after receipt of the Notice of Award, shall prepare and submit to the Owner, for their review and approval, the Construction Schedule. The Construction Schedule, as approved, shall. (i) provide for the expeditious and diligent performance of the Work within the Contract Period; and (ii) be revised as necessary, in the opinion of the Owner, to accommodate and to reflect the progress of the Project as a whole.
 - B. Submittal Schedule. The Contractor shall prepare and keep current, for the Owner's approval, a schedule of submittals (the "Submittal Schedule") which is coordinated with the Construction Schedule and allows the Owner reasonable time to review all submittals.
 - C. Compliance with Schedules. The Contractor shall conform at all times to the most recent Construction Schedule and Submittal Schedule.
 - D. Additional Scheduling Requirements. Additional scheduling requirements are contained in Section 01310 of the General Requirements.
 - E. No Reliance on Silence of Owner or Architect. The Owner's or Architect's silence as to a submitted Construction Schedule that fails to meet or satisfy, in any respect, any milestone dates or other time limitations set forth in the Contract Documents shall not relieve the Contractor of its obligation to meet those time limits, nor shall it render the Owner or Architect liable to any Separate Contractor who suffers damages, increased costs or delays as a result thereof. Similarly, the Owner's or Architect's silence with regard to a Construction Schedule submitted by the Contractor that shows performance in advance of such time limits or milestones shall not create any rights in favor of the Contractor, a Separate Contractor or any other person or entity for performance in advance of such time limits or milestones.

5.07 Shop Drawings.

- A. Submission of Shop Drawings. The Contractor shall prepare and submit to the Owner Shop Drawings and similar submittals required by the Contract Documents with reasonable promptness and in accordance with the Submittal Schedule so as not to cause a delay in the Work or in the activities of the Owner or of Separate Contractors. Submittals presented by the Contractor that are not required by the Contract Documents may be returned without action.
- B. Review Process. The Contractor shall not perform any portion of the Work requiring submittal and review of Shop Drawings or similar submittals until the respective submittal has been approved by the Owner. Such Work shall be performed in strict accordance with the approved submittals.
- C. Verification and Coordination. By approving and submitting Shop Drawings and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- D. Deviation from Contract Documents. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Owner's approval of Shop Drawings or similar submittals unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submittal and the Owner has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings or similar submittals by the Owner's approval thereof.
- E. Attention to Revisions. The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings or similar submittals, to revisions other than those requested by the Owner on previous submittals.
- F. Informational Submittals. Informational submittals upon which the Owner is not expected to take responsive action may be so identified in the Contract Documents.
- G. Additional Shop Drawing Requirements. Additional requirements are contained in Section 01340 of the General Requirements.

5.08 Inspections of Work in Place. The Contractor shall be responsible for inspection of portions of Work already performed hereunder to determine that such portions are in proper condition to receive subsequent Work.

5.09 Required Tests and Inspections. The Contractor shall give the Owner sufficient prior Notice of the date and time of required tests and inspections. Unless otherwise provided in the Contract Documents, the Contractor shall be responsible for all costs associated with such tests or inspections.

5.10 Use of Site. The Contractor shall confine the Work to areas permitted by the Contract Documents and any applicable laws, ordinances or permits and shall not unreasonably encumber the Project with any materials or equipment.

5.11 Indemnification.

- A. The Contractor hereby assumes all liability for and agrees to indemnify and hold harmless the Owner and the Architect and its or their respective Members, officers, authorized representatives and employees (each of whom shall be referred to herein as an "Indemnified Party") from and against any and all claims, losses, costs, damages, penalties, liabilities and fees (including reasonable attorneys' fees) and expenses resulting from: (i) any material breach of the representations, warranties, covenants and agreements of the Contractor contained in the Contract Documents; (ii) any injuries to persons or property caused by the negligence or other wrongful conduct of the Contractor, any Subcontractor, or any of its or their respective employees or authorized representatives; (iii) any claims filed by the Contractor (or by a Subcontractor, if permitted by law) that are adjudicated in favor of the Owner; or (iv) any other claim arising in any other manner out of or in connection with the performance of this Contract by or on behalf of the Contractor.

Notwithstanding the foregoing, the Contractor will in no event be obligated hereunder to indemnify or hold harmless any Indemnified Party against liability for damage arising out of bodily injury to persons or damage to property suffered in the course of the Work, caused by or resulting solely from the negligence of such Indemnified Party.

- B. In the event that a claim is brought against an Indemnified Party by: (a) the Contractor or an employee of the Contractor; (b) any Subcontractor or supplier or any employee thereof; (c) any person or entity engaged by or through the Contractor or any Subcontractor or supplier to furnish or perform any portion of the Work; or (d) any person or entity for whom the Contractor or any Subcontractor or supplier may be vicariously liable, then the indemnification obligations set forth in Section 5.11(A) shall not be limited in any respect by any limitation on the type or amount of damages, compensation, benefits or other remuneration payable by or for the Contractor or any Subcontractor, supplier or other such person or entity under any laws, rules, regulations or plans of any nature governing workers' compensation, disability benefits or other employee benefits.
- C. Claims on Behalf of Subcontractors. No claim of any nature shall be made against an Indemnified Party by or on behalf of a Subcontractor unless the Contractor first shall have: (i) evaluated such claim thoroughly and determined it to be meritorious; (ii) issued a written Notice to the Subcontractor finding the Subcontractor's claim to be meritorious and setting forth any additional compensation or additional days to be paid or granted to the Subcontractor on account of such claim; and (iii) paid the Subcontractor in full for such claim. In presenting such a claim, the Contractor shall provide the Owner and the Architect

with a copy of the written Notice to the Subcontractor and with evidence of payment in full of the Subcontractor's claim. No such claim shall exceed the amount actually paid to the Subcontractor by the Contractor.

The Contractor covenants and agrees not to bring a claim against an Indemnified Party for indemnity based upon a Subcontractor's claim except as specifically permitted in this subsection.

- D. **Liability Unaffected.** Nothing contained herein shall in any manner create any liability against the Owner on account of any claim for labor, services, or materials, or of Subcontractors, and nothing herein contained shall affect the liability of the Contractor or its Sureties to the Owner or to any workmen or materialmen upon bonds given in connection with this Contract. The Contractor hereby acknowledges and agrees that, as between the Owner and the Contractor, the Contractor shall bear full and complete responsibility for the performance of its Subcontractors, manufacturers, and suppliers, regardless of whether any such Subcontractor, manufacturer or supplier was designated as "preapproved" by the Owner.
- 5.12 **Conflict of Interest.** The provisions of the State and Local Government Conflict of Interests Act (Va. Code Ann. " 2.2-3100, *et seq.*) and Article IV of the Virginia Public Procurement Act entitled "Ethics in Public Contracting" (Va. Code Ann. " 2.2-4367, *et seq.*) as the same may be amended from time to time, are incorporated herein by reference. The Contractor shall incorporate the foregoing conflict of interest's clause in each subcontract entered into in connection with the Work.
- 5.13 **Non-discrimination.** The Contractor hereby covenants and agrees as follows:
- A. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin, except where religion, sex or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.
- B. The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such contractor is an equal opportunity employer.
- C. Notices, advertisements and solicitations placed in accordance with federal laws, rules or regulations shall be deemed sufficient for the purpose of satisfying the requirements of this Paragraph 5.13.

The Contractor will include the provisions of the foregoing Paragraph 5.13 (A), (B) and (C) in every subcontract or purchase order of over \$10,000, in order that the provisions contained herein will be binding upon each Subcontractor or vendor in connection with the Work.

- 5.14 Subcontractor Bonds. The Contractor hereby covenants and agrees to require such bonds of any subcontractors as may be specified in the Instructions to Bidders.
- 5.15 Safety and Health Program. The Contractor shall establish and maintain a program to protect the safety and health of all persons (employees, visitors, public) at the Site. Such program shall designate a qualified individual as responsible for implementation of the program and establish procedures for coordinating safety and health activities with Separate Contractors at the Site. The program shall comply with all Laws and Regulations, including but not limited to the Virginia Occupational and Health Standards for the Construction Industry, 29 CFR Part 1926.20 and 1926.21, and the American National Standards Institute, A10.38-2000 and A10.33-1998 (R2004).
- 5.16 Prevailing Wage Requirements: The Contractor covenants and agrees that the remuneration to any individual performing services as a mechanic, laborer, or worker for the Work will be paid at a rate not less than the Prevailing Wage Rate. The Contractor further covenants and agrees to comply, and cause each Subcontractor to comply, with the following requirements applicable to the Work performed under this Contract:
- A. Upon award of the Contract, the Contractor will certify, under oath, to the Commissioner of Labor and Industry, the pay scale for each craft or trade to be employed on, or to provide labor for, the Project or the Work by the Contractor and any Subcontractors. The Contractor's certification will, for each such craft or trade, specify the total hourly amount to be paid to employees, including wages and applicable fringe benefits, provide an itemization of the amount paid in wages and each applicable benefit, and list the names and addresses of any third-party fund, plan or program to which benefit payments will be made on behalf of employees. Within five (5) days after submitting its certification to the Commissioner of Labor and Industry, the Contractor will provide a copy of the certification to the Owner.
 - B. The Contractor and each Subcontractor will keep, maintain, and preserve: (i) records relating to the wages paid to, and hours worked by, each individual performing the work of any mechanic, laborer, or worker; and (ii) a schedule of the occupation or work classification at which each individual performing the work of any mechanic, laborer, or worker on the Project is employed during each workday and week. The Contractor and each Subcontractor will: (a) preserve such records for a minimum of six (6) years from contract expiration or termination; (b) make such records available to the Department of Labor and Industry or the Owner within 10 days of a request; and (c) certify that such records reflect the actual hours worked and the amount paid to its workers for the time period covered by the request.
 - C. The Contractor and each Subcontractor will post the Prevailing Wage Rates for each craft or trade involved in the Project and the Work, including the effective date of any changes thereto, in a prominent and easily accessible place at the Site or at any such places as are used by the Contractor or Subcontractors to pay wages to their workers. Such posting must be made in English and in such other languages as may be specified by the Owner in order to provide meaningful

access to the information in the posting to workers with limited English proficiency. Within ten (10) days of such posting, the Contractor and each Subcontractor shall certify to the Commissioner of Labor and Industry its compliance with the posting obligation set forth herein.

- D. The Contractor and each Subcontractor will comply with all requirements and obligations applicable to contractors and/or subcontractors pursuant to Section 2-3-2 of the Prevailing Wage Ordinance adopted by the Fairfax County Board of Supervisors on January 25, 2022, as the same may be amended from time to time. The Prevailing Wage Ordinance may be viewed at https://library.municode.com/va/fairfax_county/ordinances/code_of_ordinances?nodelid=1149114

- 5.17 Drug-Free Workplace Requirement. During the performance of the Work, the Contractor agrees to. (i) provide a drug-free workplace for the Contractor's employees; (ii) post in conspicuous places, available to employees and applicants for employment, a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition; (iii) state in all solicitations or advertisements for employees placed by or on behalf of the Contractor that the Contractor maintains a drug-free workplace; and (iv) include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000, so that the provisions will be binding upon each subcontractor or vendor. For purposes hereof, a "drug-free workplace" shall mean the Site.

PART 6 - SUBCONTRACTORS

- 6.01 Absence of Contractual Relationship. Nothing contained in the Contract Documents shall operate to, or otherwise have the effect of, creating a contractual relationship between the Owner or the Architect, on the one hand, and any Subcontractor or Sub-subcontractor on the other.
- 6.02 Award of Subcontracts and Other Contracts for Portions of the Work.
- A. List of Subcontractors. Unless otherwise specified in the Contract Documents, within ten (10) days after receipt of the Notice of Award of the Contract, the Contractor must submit a written statement to the Owner setting forth the name, address, and telephone number of each proposed Subcontractor and Sub-subcontractor and the portion of the Work and/or materials which each such Subcontractor or Sub-subcontractor is proposed to perform or provide, as the case may be. The Contractor also must furnish any other information (including but not limited to an OSHA Form 300) to establish to the satisfaction of the Owner that the proposed Subcontractor has the necessary facilities, skill, integrity, safety records, past experience and financial resources to perform the

Work in strict accordance with the terms and conditions of the Contract Documents.

- B. **Review by Owner.** If the Owner finds, in its sole and absolute discretion, that a proposed Subcontractor or Sub-subcontractor is not qualified, then the Contractor will be notified promptly of such decision in writing. If no such Notice is provided within 20 days after the Contractor's submission of a written statement, then the Owner shall be deemed to have accepted the Subcontractor. If it is determined a Subcontractor or Sub-Subcontractor is not qualified, then the Contractor must utilize another Subcontractor or Sub-Subcontractor at no additional cost to the Owner. The Owner may retract its acceptance of any Subcontractor in the event such Subcontractor evidences an unwillingness or inability to perform its portion of the Work in strict accordance with the requirements of the Contract Documents. Notice of such retraction will be given in writing to the Contractor. Upon receipt of notification of such rejection or retraction, the Contractor shall submit a new Subcontractor for the Owner's review. Any increase or decrease in the Contract Sum resulting from the required substitution shall be adjusted by appropriate Change Order; provided, however, that. (i) no increase in the Contract Sum will be allowed for substitutions unless the Contractor has submitted a list of proposed Subcontractors in accordance with the provisions hereof; and (ii) no such increase shall exceed the amount set forth with respect to such Work, plus 10%.
 - C. **Rejection of Subcontractor.** The Contractor shall not enter into a contract for performance of any portion of the Work with any Subcontractor who has been rejected by the Owner.
 - D. **Subcontracts.** Upon request, the Contractor promptly shall file with the Owner a complete copy of any one or more of its subcontracts. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor in accordance with the terms of these Contract Documents insofar as applicable to the Work of Subcontractors, and to give the Contractor the same power to terminate any subcontract that the Owner may exercise to terminate the Contractor under the provisions of these Contract Documents.
 - E. **Responsibility for Subcontractors.** The Owner's review or acceptance of Subcontractors as described herein shall not relieve the Contractor of any of its responsibilities, obligations and liabilities hereunder. The Contractor shall be solely responsible to the Owner for the acts, defaults, or omissions of its Subcontractors and of its Subcontractors' officers, authorized representatives and employees.
- 6.03 **Subcontractor and Sub-subcontractor Agreements.** Work performed by Subcontractors and Sub-subcontractors shall be set forth in a signed, written agreement between the parties. Each such agreement shall:

- A. be consistent in all respects with these Contract Documents and shall neither. (i) contain a provision which negates, conflicts with or otherwise compromises the requirements of the Contract Documents; or (ii) contain a provision which limits or otherwise adversely affects the rights of the Owner and the Architect as such rights are defined in the Contract Documents;
- B. require timely processing of applications for payment and of claims for additional costs, damages, or time, in order that the Contractor may in turn promptly process such applications or claims in conformance with the Contract Documents;
- C. waive the rights of either party against the other in regard to claims for fire or other peril covered by the property insurance described in Paragraph 14.02. Such waiver shall not exclude either party from rightful access to the proceeds of such insurance; and
- D. make specific reference to this Paragraph 6.03 of the General Conditions as a mutually binding provision.

6.04 Payments to Subcontractors.

- A. The Contractor will be liable for the entire amount owed to any Subcontractor with which it contracts, provided that the Contractor will not be liable for amounts otherwise reducible due to the Subcontractor's noncompliance with the terms of its contract. However, in the event that the Contractor withholds all or a part of the amount promised to the Subcontractor under the Contract, the Contractor must notify the Subcontractor, in writing, of its intention to withhold all or a part of the Subcontractor's payment with the reason for nonpayment. Payment by the Owner to the Contractor will not be a condition precedent to payment to any lower-tier Subcontractor. Any provision in the Contract Documents contrary to this paragraph will be unenforceable.
- B. Within seven (7) days after receipt of payment from the Owner, the Contractor shall:
 - 1. Pay each Subcontractor for the proportionate share of the total payment received by the Contractor attributable to Work performed by such Subcontractor; or
 - 2. Notify the Owner and the Subcontractor in writing of the intention to withhold all or part of the amounts due a Subcontractor pursuant to Paragraph 6.04(B)(1) above and state the reason in reasonable detail for such withholding.
- C. In the event the Contractor fails to submit a timely Application for Payment, and that failure is due exclusively to the actions of the Contractor, the Subcontractor shall have the right to be paid by the Contractor upon demand the amounts due as described in Paragraph 6.04(B)(1).

- D. The Contractor shall pay interest on amounts owed to the Subcontractor which remain unpaid seven (7) days after the Contractor's receipt of payment from the Owner; provided, however, that amounts owed the Subcontractor which have been withheld properly pursuant to Paragraph 6.04(B)(2) shall not accrue interest. Interest on amounts due the Subcontractor and unpaid shall accrue at the rate of .5 percent per month; provided, however, that the Contractor's obligation to pay interest hereunder shall in no event be construed to be or otherwise become an obligation of the Owner. Claims for reimbursement by the Owner for interest charges owed by the Contractor to any Subcontractor shall not be allowed.
- E. Insurance proceeds received by the Contractor under the insurance policies described in Part 14 shall be equitably distributed to the affected Subcontractors in accordance with their respective interests in the underlying claim.
- F. Information concerning percentages of completion of Work performed by a Subcontractor as shown in Application for Payment may be made available to that Subcontractor upon mutual agreement with the Owner.
- G. The Contractor shall include in each subcontract a requirement that each Subcontractor shall be bound by and subject to the provisions of Paragraph 6.04(B) through 6.04(E) above in regard to payments made by such Subcontractor to its Sub-subcontractors.

PART 7 - SEPARATE CONTRACTS

- 7.01 **Owner's Right to Award Separate Contracts.** The Owner reserves the right to award one or more separate contracts in connection with other portions of the Project or other construction or operations at the Site. The Contractor hereby acknowledges that for all or some of the Contract Period such Separate Contractors may be present at the Site. The Contractor hereby assumes the risk of delays and disruptions caused by the presence of Separate Contractors at the Site and hereby covenants and agrees that it shall not make a claim against the Owner for additional compensation as a result of the activities of such Separate Contractors, unless such activities give rise to an "unreasonable delay" as set forth in Part 11 hereof.
- 7.02 **Covenant to Coordinate and Cooperate.** As part of the Work and at no additional cost to the Owner, the Contractor covenants and agrees at all times during its performance of the Work to coordinate such performance with the activities and operations of any Separate Contractors. The Contractor shall use its good faith best efforts to cooperate, coordinate and consult with the Owner and all Separate Contractors in the performance of the Work. The Contractor shall connect and coordinate the Contractor's construction and related operations with the construction and related operations of any Separate Contractors to the extent necessary to achieve the timely and satisfactory completion of the Work and in such a manner as to avoid delaying, interfering with, or otherwise placing undue burden upon the activities of any Separate Contractor. The Contractor shall afford the Owner and each Separate Contractor reasonable opportunity for

introduction and storage of their materials and equipment and reasonable access to the Site for performance of their respective activities.

- 7.03 No Interference with Separate Contractors. The Contractor shall not take any action, or omit to take any action, that will delay, interfere with, or otherwise unduly burden the activities of a Separate Contractor or that will obstruct reasonable access by any Separate Contractor to the site of such Separate Contractor's activities and operations.
- 7.04 Scheduling with Separate Contractors. Upon request by the Owner, the Contractor shall meet with the Owner and any Separate Contractors at times designated by the Owner in order to review the Construction Schedule and the schedules of the Separate Contractors and to coordinate and conform those schedules. The Contractor promptly shall make any revisions to the Construction Schedule that are required, in the Owner's sole discretion, to serve the interests of the Project as a whole. The Construction Schedule, as revised, shall then constitute the schedule to be used by the Contractor until subsequently revised.
- 7.05 Report of Discrepancies. Whenever the Contractor's Work depends for proper execution or results upon construction or operations by a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Owner in writing any apparent discrepancies or defects in such construction or operations performed by a Separate Contractor that would render it unsuitable for such proper execution and results. Failure of the Contractor to report such apparent discrepancies and/or defects shall constitute an acknowledgment that the Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

PART 8 - MISCELLANEOUS PROVISIONS

- 8.01 Governing Law. The Contract Documents shall be governed by and construed in accordance with the laws of the Commonwealth of Virginia, without reference to conflict of laws principles.
- 8.02 Successors, Assigns and Legal Representatives. Except as provided in Part 6 hereof with respect to Subcontractors, this Agreement shall not be assigned, sublet or transferred, in whole or in part, by operation of law or otherwise, by either of the parties hereto except with the prior written consent of the other. Unless specifically stated to the contrary in any written consent to an assignment, no assignment shall operate to release or discharge the assignor from any duty or responsibility under this Agreement. The Owner's consent to a particular subcontract or assignment shall in no event constitute a waiver of the Owner's right to consent to any further or additional subcontracts or assignments.
- 8.03 Entire Agreement. The Contract Documents constitute the entire agreement among the parties pertaining to the Work and supersedes all prior and contemporaneous agreements and understandings of the parties in connection therewith. The Contract Documents may not be modified or amended orally or by course of conduct. Any

modification or amendment shall be set forth in a written Change Order executed by the Owner and the Contractor.

8.04 Royalties and Patents. The Contract Sum includes all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the Work. Whenever the Contractor is required or desires to use any design, device, material or process covered by letters of patent or copyright, the Contractor shall indemnify and save harmless the Owner and Architect, their officers, agents and employees from any and all claims for infringement by reason of the use of any such patented design, device, tool, material, equipment, or process to be performed under the Contract, and shall indemnify the Owner and the Architect, their officers, agents, authorized representatives, and employees for any costs, expenses and damages which may be incurred by reason of any such infringement at any time during the prosecution and after the completion of the Work. Notwithstanding the foregoing, the Contractor shall not be liable hereunder to the extent that any infringement arises by virtue of a design or implementation supplied to the Contractor by the Owner or the Architect.

8.05 Contractual Claims.

- A. If the Contractor wishes to make a contractual claim, whether for extra compensation, damages or any other relief, he shall provide Notice to the Owner and to the Architect in accordance with the provisions of Paragraph 8.09 hereof. The Contractor's failure to comply strictly with the requirements of Paragraph 8.09 shall result in waiver of the claim
- B. Resolution of any outstanding claims, counterclaims, disputes and other matters in question arising out of or relating to the Contract Documents to the extent not resolved by the parties hereto, shall be decided by a court of competent jurisdiction in the Commonwealth of Virginia; provided, however, that nothing contained herein shall be construed to invalidate the finality of the Owner's decisions. The Owner and the Contractor hereby waive any right they may have to a jury trial in connection with the resolution of any such claim, counterclaim, dispute or other matter arising out of or in connection with the Contract Documents. In any such court proceeding, the Owner shall have the right to bifurcate or otherwise reserve the court's determination regarding issues of: (i) the Owner's entitlement to recovery from the Contractor of the Owner's attorney's fees and costs; and (ii) the quantum of any such recovery, until after a decision or other disposition by the court in the underlying matter.

8.06 Tests and Inspections.

- A. The Contractor shall give the Owner sufficient prior Notice of the date and time of required tests or inspections. The Contractor shall be responsible for all costs associated with such tests or inspections, unless otherwise specifically excluded from the scope of Work defined in the Contract Documents.
- B. If, during the course of the Work, the Owner decides it is reasonable and necessary to perform supplemental inspections or testing not required by law or

Contract Documents, then the Contractor will be instructed in writing to arrange for such testing. It shall be the responsibility of the Contractor to give timely Notice of such inspections or testing to the Owner. If the supplemental testing or inspections reveal defective or non-complying Work, then the Contractor shall be responsible for all costs associated with the performance of the tests or inspections, any additional costs required to rectify the defective or non-complying Work, and any costs for additional architectural services related thereto. If the Work is found to be in compliance with the requirements of the Contract Documents, then the Contractor shall be entitled to an equitable adjustment in for the reasonable associated costs of the testing or inspections.

- C. The Contractor shall be responsible for securing all certificates or records of additional tests or inspections and distributing them to the Owner in a timely manner.
- D. Performance of required or supplemental inspections and testing by persons or organizations other than the Contractor, Subcontractors, or Sub-subcontractors, shall not compromise performance of the Work in compliance with the Contract Documents.

8.07 Conflict with Provisions of Laws or Regulations.

- A. In the event that there is a conflict between a provision of these Contract Documents and that of any Law or Regulation, such conflicting Law or Regulation shall control.
- B. All legal provisions required by law to be included in the Contract Documents shall be deemed to be a part hereof, whether actually set forth or not herein.

8.08 No Claims Against Individuals. No claim whatsoever shall be made by the Contractor against any officer, Member, authorized representative or employee of the Owner or the Architect for, or on account of, anything done or omitted to be done in connection with this Contract, and the Contractor shall be strictly liable for all costs, attorneys fees and expenses incurred by any individual or entity who is sued in violation of this Paragraph.

8.09 Disputes.

- A. Notice of Claim. If the Contractor wishes to dispute that any Work required, necessitated, or ordered by the Architect or the Owner, or otherwise to claim any action required or ordered by the Architect or the Owner to be taken or not taken violates the terms and provisions of this Contract, then he shall proceed with such Work and/or comply with such requirement or order without delay and shall, within five days after the earlier of (a) commencing such Work or (b) receiving Notice of such requirement or order, notify the Owner and the Architect, in writing, of his claim with respect thereto and request a final determination thereof. In order to invoke the procedures of this Paragraph, the Contractor's request must. (i) refer specifically to this Paragraph by number; (ii) in the case of the Owner, be hand-delivered both to the office of the Director, Office of Facilities

Management and to the Project Manager at the Site; (iii) contain a full explanation of the basis of the Contractor's position, and the rationale for Contractor's request, including actual photocopies of all materials or documents (other than Contract Documents) referred to in the Contractor's request; (iv) detail the quantum of any relief requested by the Contractor and provide verified substantiation of all such amounts; (v) describe in detail any other relief requested; (vi) describe in detail all efforts the Contractor has made to mitigate any alleged loss or otherwise avoid the claim; and (vii) be signed by an officer of Contractor under oath. No request for a Change Order, request for change proposal, or other requested modification shall be sufficient, on its own or collectively to satisfy or to defer the commencement of the Notice requirements set forth herein.

- B. **Claim Review Process.** The Owner shall issue a written determination with regard to any such claim on or before the date that is 14 days after the date of its receipt of the Contractor's written request; provided, however, that in the event that the Owner determines, based upon the size or complexity of the claim at issue, that additional time is required for the issuance of a response, the Owner shall issue written Notice of such finding to the Contractor within 14 days following the date of its receipt of the Contractor's written request and shall issue a written determination with regard to such claim on or before the date that is 60 days after the later of (i) the date of the Owner's receipt of the Contractor's written request or (ii) the Contractor's submission of all supplemental information where such has been requested by the Owner. The Contractor's failure to submit promptly any supplemental information requested by the Owner shall result in the waiver of the claim. In order to reserve its right to claim compensation for such Work, or damages resulting from such compliance, the Contractor shall, within five days after receiving Notice of the Owner's determination and direction, notify the Owner and the Architect, in writing, that the Work is being performed, or that the determination and direction is being complied with, under protest. Failure of the Contractor to so notify the Owner and the Architect as provided herein shall constitute a waiver and release of the Contractor's right to claim compensation for any Work performed under protest or damages resulting from such compliance. Should Owner fail to issue a written determination within the time periods specified herein, such failure shall be deemed to be a denial of the claim entitling the Contractor to institute legal action with respect to the claim without further administrative review by Owner. In no event shall Contractor be permitted to make a total cost claim or the like against Owner, nor any other claim which fails to conform strictly to the above standards or to Virginia law; any such claims shall be deemed to be null and void.
- C. **Undisputed Amounts; Claims for Extension of Time.** All monies owed and not in dispute will be made available to the Contractor in accordance with the Contract Documents. Any request for an extension of time in connection with disputed Work shall be governed by Part 11 hereof.

- 8.10 Benefit of Agreement. The Contract Documents shall be enforceable and binding upon, and shall inure to the benefit of, the parties hereto, their respective successors and permitted assigns. Nothing contained herein, express or implied, is intended to or shall confer upon any other person any rights, benefits or remedies of any nature whatsoever under or by reason of this Agreement.
- 8.11 No Estoppel. Neither the Owner, nor any officer, Member, employee, or authorized representative thereof, will be bound, precluded, or estopped by any action, determination, decision, acceptance, return, certificate, or payment made or given under or in connection with this Contract by any officer, employee, Member or authorized representative of the Owner or of the Architect, at any time either before or after final completion and acceptance of the Work or any payment therefor. The Owner may, at any time and from time to time. (a) show the true and correct classification, amount, quality, or character of the Work performed, or that any determination, decision, acceptance, return certificate or payment is incorrect or was improperly made in any respect, or that the Work or any part thereof does not in fact conform to the requirements of the Contract Documents; (b) demand and recover from the Contractor any overpayment made to him or such damages as the Owner may sustain by reason of the Contractor's failure to comply with the requirements of the Contract Documents; or (c) both of the foregoing clauses (a) and (b).
- 8.12 No Waiver of Rights. No act or omission on the part of the Owner (including but not limited to those matters set forth in A through D below) shall be deemed to constitute a waiver of any right, duty, obligation or other provision set forth in these Contract Documents:
- A. inspections conducted by the Owner, the Architect, or any of their respective employees, officers, Members or authorized representatives;
 - B. orders for the payment of money;
 - C. payments for, or acceptance of, all or any part of the Work;
 - D. extensions of time or changes to the Contract Documents, Specifications or Drawings.

In order to be effective, any waiver by the Owner must be in writing and must expressly use the term "waiver," or a variation thereof. In no event shall any waiver of any breach of this Contract be held as a waiver of any subsequent breach of this Contract. The terms of this Contract shall be in addition to, and not a limitation on, any and all rights and remedies which the Owner has or may have at law or in equity. The Owner will have the right to enjoin the Contractor against any breach of the terms of this Contract without any showing that such relief is necessary to avoid irreparable injury or that there is no adequate remedy at law.

PART 9 - CHANGES IN THE WORK

9.01 Minor Changes.

- A. **Owner's Right to Make Changes.** The Owner reserves the right to make such additions, deletions, or changes to the Work as may be necessary in its sole and absolute discretion to complete the Work; provided, however, that no such additions, deletions or changes shall materially affect the substance hereof or materially change the Contract Sum. This Contract shall in no way be invalidated by any such additions, deletions or changes. No claim shall be made by the Contractor for loss of anticipated profits resulting from any such addition, deletion, or change to the Work.
- B. **Construction Conditions.** Construction conditions may require minor changes in the location and installation of the Work and equipment to be furnished and other Work to be performed hereunder. The Contractor, when ordered by the Architect, shall make such adjustments and changes in the locations and Work as may be necessary without additional cost to the Owner, provided such adjustments and changes do not materially alter the character and quantity of the Work as a whole, or the Contract Sum, and provided further that Drawings and Specifications showing such adjustments and changes are given to the Contractor by the Owner or Architect within a reasonable time before work involving such adjustment and changes is begun. The Owner and the Architect shall be the sole judges of what constitutes a minor change for which no additional compensation shall be allowed.
- C. **Time Extension for Minor Changes.** The Contractor shall be entitled to an extension of time for such minor changes only for the number of days which the Architect may determine to be necessary to complete such changes and only to the extent that such changes actually delay the completion of the Project, and then only if the Contractor shall have strictly complied with all the requirements of the Contract Documents.

9.02 Extra Work.

- A. **Order for Extra Work.** The Owner may, in its sole and absolute discretion, at any time by issuance of a Work Order or Change Order and without notice to the Sureties require the performance of such Extra Work as it deems necessary or desirable. A Work Order or a Change Order covering Extra Work shall be valid only if issued in writing and signed by the Owner and the Architect, and the Extra Work so ordered must be performed by the Contractor. The Contractor hereby covenants and agrees to perform such Extra Work on the terms and conditions set forth in the applicable Work Order or Change Order, as the case may be, and hereby waives any claim, suit or cause of action of any nature based, in whole or in part, upon the allegation that any Extra Work ordered hereunder and/or any Work omitted pursuant to Paragraph 9.03 hereof, individually or in the aggregate, constitute a cardinal change to, or other material deviation from, the Contract Documents and/or the Work contemplated thereby. Any attempt by the Contractor to alter or modify a Change Order or to reserve a claim thereunder shall be void and of no legal effect. Each Change Order, when executed, shall constitute full and final compensation for all matters directly or indirectly related to or arising from the changes to the Work ordered thereby (the "Changed Work"), including, but

not limited to, all Overhead and all other direct and indirect costs associated with the Changed Work and any and all adjustments (of whatever nature) to the Contract Sum or to the Contract Period attributable to the Changed Work.

- B. Compensation for Extra Work. The amount of compensation to be paid to the Contractor for any Extra Work set forth in a Work Order or a Change Order shall be determined as follows:
1. By such applicable unit prices, if any, as are set forth in the Contract; or
 2. If no such unit prices are set forth, then by a lump sum or other prices mutually agreed upon by the Owner and the Contractor; or
 3. If no such unit prices are set forth in the Contract and if the parties cannot agree upon a lump sum or other unit prices, then by the actual and reasonable costs as determined by the Architect in accordance with Section 01153 of the General Requirements.
- C. Full and Final Compensation. Regardless of the manner in which the adjustment to the Contract Sum on account of Extra Work is determined, such adjustment shall be deemed to include all amounts, whether direct, indirect or consequential, resulting from the performance of the Extra Work, including but not limited to all Overhead. The adjustment to the Contract Sum, if any, shall constitute the final, full and mutual accord and satisfaction for all costs related to such change.
- D. Notice and Records of Extra Work. At least one day prior to the performance of Extra Work hereunder, the Contractor shall provide Notice to the Owner and Architect setting forth: (1) his intention to perform Extra Work; (2) the nature of the Extra Work and the precise location, time of commencement, duration, and basis therefor; and (3) Subcontractors involved therein. Unless such Notice of Extra Work is provided in the manner prescribed herein, such Extra Work shall not be compensated. Records of Extra Work performed hereunder, if any, shall be submitted by the Contractor to the Owner at the end of each day on which such Extra Work shall have been performed. Duplicate copies of accepted records shall be made and signed by both the Contractor or its representative and the Owner's representative, and one copy shall be retained by each.
- E. Payment Requests. Payment requests for approved and duly authorized Extra Work shall be submitted by the Contractor upon a certified statement supported by receipted bills. Such statements shall be submitted for payment by the Owner in the month in which such Extra Work was performed and in accordance with Paragraph 12.03 hereof.
- F. Time Extension for Extra Work. The Contractor shall be entitled to an extension of time for Extra Work duly authorized by the Architect only for the number of days required, in the opinion of the Architect, to complete such Extra Work, and then only if the Contractor has strictly complied with all the requirements of the Contract Documents.

9.03 Omitted Work.

- A. Omission of Work by Owner. The Owner may at any time by a written order and without notice to any Surety require the omission of such Work as the Owner may find necessary or desirable in its sole and absolute discretion.
- B. Order for Omission of Work. Order An order for omission of Work shall be valid only if signed by the Owner and the Architect and the Work so ordered must be omitted by the Contractor. The amount of any credit due the Owner as a result of any such omission of Work shall be determined in accordance with Paragraph 9.02(B)(1), (2) and (3) above.

9.04 Suspension of Work.

- A. Suspension of Work by Owner. The Owner may suspend the Work by written order in order to. (i) coordinate the activities and operations of the Contractor with that of any Separate Contractors; (ii) expedite completion of the Project, even though completion of the Work may be delayed thereby; or (iii) serve the best interests of the Owner or of the Project as a whole. No single suspension by the Owner shall exceed 10 days.
- B. Order for Suspension of Work. An order for suspension of the Work (or any portion thereof) shall be signed by the Owner and the Architect, shall identify the Work that is to be suspended by the Contractor, and shall set forth the effective dates of such suspension. Such order (and the effective dates of the suspension) may be updated by the Owner from time to time during the course of the suspension.
- C. Compensation for Suspension. In the event of a suspension of the Work (or any portion thereof) hereunder, the Contractor shall accept as full compensation for such suspension. (i) the actual costs incurred by the Contractor on this Project for demobilization and remobilization, as documented to the satisfaction of the Owner and the Architect; and (b) an extension of time for completion of the Work for such number of days as the Owner and the Architect shall determine that the suspension shall have actually and adversely impacted the Critical Path for the Work.

- 9.05 Audit. The Owner and its authorized representatives shall, until the expiration of three years from the date of final payment under these Contract Documents, have the right to examine and copy those books, records, accounts, documents, papers and other supporting data which involve transactions related to this Contract or which otherwise permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein (the "Records"), and the Contractor hereby covenants to maintain the Records in good order for such time and to deliver promptly the Records to the Owner within 5 days after its written request. In the event that the Contractor fails to comply with this Paragraph 9.05, then the Owner, in addition to any other available remedies, shall have the right to withhold payment of amounts otherwise

due the Contractor until such time as the Contractor shall have complied fully with the obligations set forth herein.

PART 10 - CHANGE ORDER AND WORK ORDER PROCEDURES

10.01 Definitions.

- A. Change Order. Refer to the definition in Paragraph 1.02.
- B. Work Order. Refer to the definition in Paragraph 1.28.
- C. Overhead. Refer to the definition in Paragraph 1.18.

10.02 Change Orders. See Section 01153 of the General Requirements.

PART 11 - TIME

11.01 Time of Start and Completion; Liquidated Damages.

- A. Commencement and Performance of Work; Time of the Essence. The Contractor shall commence the Work within ten (10) days after the date stated as the date to proceed in the Notice to Proceed. Time being of the essence with respect to this Contract, the Contractor shall prosecute the Work diligently, using such means and methods of construction as will secure its full completion in accordance with the requirements of the Contract Documents, and will complete the Work within the Contract Period. By executing the Agreement, the Contractor confirms that the Contract Period constitutes a reasonable period for performing the Work. The Contractor shall proceed expeditiously with adequate forces, scheduling and resources to complete the Work within the Contract Period. The actual Dates of Substantial and Final Completion will be established by the Architect after inspections have been conducted in accordance with Paragraphs 12.04 and 12.05 hereof.
- B. Liquidated Damages. The Owner and the Contractor hereby acknowledge and agree that time is of the essence with respect to this Contract and that in the event the Contractor fails to complete the Work within the Contract Period, the Owner will incur actual and considerable monetary damage, the actual amounts of which are uncertain and not readily ascertainable. The stipulated amount per day set forth in the Summary of Work (Section 01010) is reasonably in proportion to the probable loss to the Owner and that amount per day is hereby agreed upon as the liquidated damages for each day that the time consumed in completing the Work exceeds the time allowed. This stipulated amount shall in no event be considered to be a penalty or otherwise than as the liquidated and adjusted damages to the Owner because of the delay, and the Contractor and its Surety hereby agree that the stated sum per day for each such day of delay shall be deducted and retained out of the monies which may become due hereunder and if not so deductible, the Contractor and its Surety shall be liable therefor.

11.02 Extension of Time.

- A. Extension of Time. The parties to this Contract wish to provide a framework for resolving issues in connection with any delays that may occur on this Project. No extension beyond the date of completion fixed by the terms of the Contract will be effective unless granted in writing and signed by the Owner's representative.
- B. Contractor's Notice of Delay. Notice of delay must be given in writing to the Director of the Owner's Office of Facilities Management, with copies to the Architect and to the Owner's On-Site project manager within 5 days after the commencement of the delay and in strict accordance with the General Conditions. Each such Notice shall. (i) be submitted in written, narrative form on the Contractor's letterhead; (ii) be identified as a "Notice of Delay;" (iii) shall describe, in reasonable detail, the nature of the delay encountered; (iv) shall have appended to it a copy of this Paragraph 11.02; and (v) shall set forth the date of the commencement of the delay. An update to the Construction Schedule shall in no event be deemed to be sufficient, on its own and unless submitted as part of an application for extension of time as provided herein, to satisfy the Notice of requirements set forth in this Paragraph 11.02. In case of a continuing cause of delay, only one Notice shall be required.
- C. Contractor's Application for Extension of Time. The Contractor's application for any extension of time shall be in writing and addressed to the Director of the Owner's Office of Facilities Management, with copies to the Architect and to the Owner's on-site project manager, not more than 20 days after the commencement of the delay. Any such application for extension of time shall. (i) be on the Contractor's letterhead; (ii) describe in reasonable detail the reasons for and causes of the delay; (iii) demonstrate in a clear and convincing fashion the extent to which, if any, the delay impacts the Critical Path for the Project; (iv) contain a justification for each additional day which is requested; (v) be identified as an "Application for Extension of Time; and (vi) have appended to it a copy of this Paragraph 11.02(A), together with copies of any documents referenced therein. If the delay should continue for longer than 20 days, the Contractor must submit the substantiation and support for such delay no less frequently than in 20 day increments. Any application for extension of time which does not conform in every respect to the requirements of this Paragraph 11.02(A) shall be deemed to have been waived.
- D. Basis for Extension of Time. If such an application is made, the Contractor shall be entitled to an extension of time for delay in completion of the Work if obstructed or delayed in the commencement, prosecution or completion of any part of the Work on the Critical Path by any act or delay of the Owner, or by riot, insurrection, war, pestilence, acts of public authorities, fire, earthquakes, or by strikes, or other causes, which causes of delay mentioned in this Paragraph, in the opinion of the Owner, are entirely beyond the expectation and control of the Contractor.

- E. Measurement of Delay. The Contractor shall, however, be entitled to an extension of time for such causes only for the number of days of delay which the Architect may determine to be due solely and exclusively to such causes and only to the extent that such occurrences actually and adversely impact the Critical Path for the Work, and then only if the Contractor shall have strictly complied with all of the requirements of these Contract Documents.
- F. Delay for Abnormal Weather Conditions. The Contract Period will be adjusted to account for unusually severe and abnormal weather conditions that prevent or inhibit the Contractor's performance of the Work and lengthen the Critical Path indicated on the Construction Schedule (such unusually severe and abnormal weather conditions referred to herein as "Inclement Weather"). The occurrence of Inclement Weather shall be established by reference to climatological data compiled by the U.S. Department of Commerce National Oceanic and Atmospheric Administration for Washington-Dulles International Airport or Washington National Airport, whichever is closest to the Site of the Project.
- G. Procedure for Protesting Denial of Extension of Time. In the event that the Contractor is denied an extension of time hereunder, he may contest such decision by notifying the Architect, the Director of the Owner's Office of Facilities Management and the Project Manager in writing within four days after the issuance of such denial, stating in detail its reasons for disagreement and submitting all information necessary for a final determination by the Owner pursuant to Paragraph 8.09 hereof. The Contractor shall provide the Architect and the Owner with all substantive information that supports the Contractor's claim for an extension of time. The Contractor must address all elements of the denial of such time extension. No claim for an extension of time under this provision will be valid unless submitted as stated herein.
- H. Supplier and Subcontractor Delays. Except as expressly set forth in Section 11.02(J), delays caused by the failure of the Contractor's materialmen, manufacturers, and dealers to furnish approved shop drawings, materials, fixtures, equipment, appliances, or other supplies on time or the failure of Subcontractors to perform their Work in conformity with the approved Construction Schedule shall not constitute a basis for an extension of time.
- I. Remedy for Delay. Except as expressly set forth in Section 11.02(J) hereof, no claim for payment, compensation or adjustment of any kind (other than the extensions of time provided for herein) shall be made or asserted against the Owner by the Contractor for costs or damages caused by hindrances or delays from any cause, whether such hindrances or delays be avoidable or unavoidable, and the Contractor shall make no claim for damages by reason of any such hindrances or delays, and will accept in full satisfaction of such hindrances or delays an extension of time to complete performance of the Work as specified.
- J. Owner-Caused Delay. Notwithstanding the provisions of Section 11.02(I), nothing contained herein is intended to, or shall have the effect of, waiving, releasing or extinguishing any rights of the Contractor to recover costs or

damages for an unreasonable delay in performing this Contract, either on its behalf or on behalf of a Subcontractor, if and to the extent that such delay is caused by acts or omissions of the Owner, its agents or employees, and due to causes within their control. In order to seek costs or damages in connection with any such unreasonable delay, the Contractor must comply fully with each of the requirements set forth in Section 11.02(B) hereof and shall identify each Notice of delay and application for extension of time submitted thereunder, respectively, as a "Notice of Delay and Additional Costs" and as an "Application for Extension of Time and Additional Costs." Each Notice of Delay and Additional Costs shall contain, in addition to the requirements set forth in Section 11.02(B). (i) a description of the nature of the monetary loss or damage associated with the unreasonable delay; (ii) an explanation as to why the delay is deemed to be "unreasonable;" (iii) a clear demonstration of how such unreasonable delay was caused solely and exclusively by acts or omissions of the Owner, its agents and employees, and due to causes within their control; and (iv) a detailed description of all efforts the Contractor has made to mitigate any alleged loss or otherwise avoid the claim. In addition to the requirements set forth in Section 11.02(B), each Application for Extension of Time and Additional Costs shall demonstrate in a clear and convincing fashion. (i) that the delay was "unreasonable;" and (ii) the extent, if any, to which the delay was caused by acts or omissions of the Owner, its agents or employees, and due to causes within their control. In the event it is determined that the Contractor (either on its behalf or on behalf of a Subcontractor) is entitled to costs or damages on account of such an Owner-caused unreasonable delay, the amount thereof shall be determined as set forth in Section 11.02(K).

- K. Contractor's Liquidated Damages. The parties recognize the difficulty in calculating damages incurred by the Contractor resulting from unreasonable delays caused by acts or omissions of the Owner, its agents and/or employees, and due to causes within their control. As such, the parties hereby agree that the amount set forth in the Summary of Work (Section 01010) shall be the liquidated damages for each and every day that the Contractor and/or any Subcontractor(s) incurs compensable costs or damages for unreasonable delays in performing this Contract and that this figure represents a reasonably accurate forecast of the daily aggregate, anticipated actual damages in the event of an unreasonable delay. The parties hereby acknowledge and agree that the liquidated damages provided for hereunder represent full and final compensation for all losses, costs and damages incurred in the aggregate by the Contractor and its Subcontractors (if any) in connection with an unreasonable delay and that neither the Contractor nor any Subcontractor will in any event submit a claim or seek further or additional compensation in excess of the stated amount. The Contractor shall include in each of its subcontract agreements for the Project a liquidated damages provision similar to that set forth herein.
- L. Reimbursement of Owner's Costs and Expenses. In the event that the Contractor makes a claim against the Owner for costs or damages due to unreasonable delays caused by the Owner, its agents and/or employees and such claim is determined to be false or to have no basis in law or otherwise is

resolved in favor of the Owner, in whole or in part, then the Contractor shall be liable to the Owner for a percentage of all the costs the Owner incurs in investigating, analyzing, negotiating, and litigating the claim. The percentage for which the Contractor shall be liable shall be equal to the percentage of the Contractor's total delay claim that is determined through litigation or administrative procedures to be false or to have no basis in law or otherwise resolved in favor of the Owner.

- M. **Phased Construction.** Where portions of the Work have been phased in order to accommodate Owner's use of existing premises, and the beginning date and ending date for the performance of the phased Work have been stipulated, and the beginning date must be changed to accommodate unforeseen circumstances, then the ending date shall accordingly be adjusted so that the amount of time allotted for the phased Work shall not change.

PART 12 - PAYMENTS AND COMPLETION

12.01 Prices.

- A. **Contract Sum.** For the Contractor's complete performance of the Work, the Owner agrees to pay, and the Contractor agrees to accept, subject to the terms and conditions hereof, the Contract Sum, taking into consideration any deductions based on award of a combination of alternates, if applicable, plus the amount required to be paid for Extra Work ordered under Paragraph 9.02 hereof, less credit for any Work omitted pursuant to Paragraph 9.03 hereof.
- B. **Unit Prices; Estimated Quantities.** The amount awarded as a unit price for any unit price Contract item shall represent payment in full for all the material, equipment and labor necessary to complete, in conformity with the Contract Documents, each unit or item of Work shown, specified, or required with respect to such unit price Contract Item. With respect to unit price items, the number of units actually required to complete the Work under the Contract may be less or more than stated in the bid. The Contractor agrees that no claim will be made for any damages or for loss of profits or overhead because of a difference between the quantities of the various classes of Work assumed and stated in the bid as a basis for comparing bids and the quantities of Work actually performed.
- C. **No Other Payments Due.** No payment other than the amount awarded will be made for any class of work included in a lump sum Contract item or a unit price Contract item unless specific provision is made therefor in the Contract Documents.

- 12.02 **Submission of Schedule of Values.** See Section 01370 of the General Requirements. The Schedule of Values, once accepted by the Architect, may be used for checking the Contractor's applications for partial payments hereunder but shall not be binding upon the Owner or the Architect for any purpose whatsoever.

12.03 Partial Payments.

- A. Applications for Partial Payment. On or about the first of each month, the Contractor shall make and certify an estimate of the amount and fair value of the Work performed during the preceding month and may apply for partial payment. The Architect may, in his discretion, revise the estimate to show the actual value of Work completed in accordance with the Architect's observation of the Work. The Contractor agrees to be bound by the Architect's revisions to its applications for partial payment. Whenever the monthly estimate, after approval by the Architect, shows that the value of the Work completed during the period covered by the payment request exceeds \$1,000.00, the Architect will issue a Certificate of Payment for such Work. Such Certificate will authorize payment by the Owner in an amount equal to the value of the Work completed less any sums retained or deducted by the Owner under the terms of the Contract Documents, and less retainage of 5 percent of payments claimed. Within 45 days after receipt of each Certificate of Payment, the Owner shall pay the Contractor in accordance with the applicable Certificate and the Contract Documents. Unless withheld in accordance with Paragraph 12.03(B) hereof, amounts not paid when due shall accrue interest at a rate of .5% per month. The Owner may, in its sole and absolute discretion, reduce the amount of retainage withheld, in the latter stages of the Project. For additional requirements, see Section 01152 for other Requirements.
- B. Withholding Payment. The Owner may withhold payment to the Contractor hereunder to such extent as may be necessary in the opinion of the Architect to protect the Owner due to loss because of:
1. defective Work not remedied;
 2. third party claims (including Separate Contractor Claims) filed or reasonable evidence indicating probable filing of such claims;
 3. failure of the Contractor to make payments properly to Subcontractors or 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 another person or entity (including a Separate Contractor);
 6. reasonable evidence that the Work will not be completed within the Contract Period;
 7. persistent failure to carry out the Work in accordance with, or to otherwise observe the requirements of, the Contract Documents; or

8. liability, damage, or loss due to injury to persons or damages to the Work or property of Separate Contractors, or the subcontractors of others, caused by the act or neglect of the Contractor or any of its Subcontractors or Sub-subcontractors.
- C. Owner's Application of Withheld Amounts. The Owner shall have the right, as an authorized representative for the Contractor and without the Surety's consent, to apply any such amounts so withheld in such manner as the Owner may deem proper to satisfy such claims or to secure such protection. The application of these amounts shall be deemed payments for the account of the Contractor and shall reduce the Owner's obligation to the Contractor accordingly.
- D. Payment for Materials and Equipment. Unless otherwise provided herein, no partial payment will be made for any materials or equipment supplied hereunder before they are. (i) incorporated in the Work in a permanent manner as required by the Contract Documents, (ii) properly stored at the Site of the Project or (iii) properly stored in a bonded warehouse to the satisfaction of the Owner.
- E. Equipment and Materials Stored On Site. The cost of equipment and materials delivered and stored at the Site of the Project and tested for adequacy may be included in the Contractor's application for partial payment; provided, however, that the Contractor shall furnish written evidence satisfactory to the Owner that the Contractor is the owner of such materials or equipment at the time of payment therefor by the Owner and that such equipment is being stored and maintained in accordance with the Contract Documents and the manufacturer's recommendations. The amount to be paid by the Owner for such equipment and nonperishables will be 90 percent of the documented invoice cost to the Contractor as supported by receipted bills, which shall be furnished to Owner at the time the request for payment is made. Such payment shall not relieve the Contractor of full responsibility for completion of the Work and for protection of materials and equipment until incorporated in the Work in a permanent manner as required by the Contract Documents.
- F. Payment Affidavits. Before any payment will be made under this Contract, the Contractor and every Subcontractor, if required, shall deliver to the Architect a written, verified statement, in satisfactory form, showing in detail all amounts then due and unpaid by the Contractor to all laborers, workers, and mechanics, employed under the Contract for the performance of the Work at the Site of the Project, for daily or weekly wages, or to other persons for materials, equipment, or for supplies delivered at the Site of the Project during the period covered by the payment request.
- G. No Improper Payments. Upon the request of the Architect, as a prerequisite for payment pursuant to the terms of this Contract, the Contractor shall give the Owner a statement that no employee of the Owner has received or has been promised, directly or indirectly, any financial benefit, by way of a fee, commission, finder's fee or in any other manner, or any other remuneration arising from or directly or indirectly related to this Contract. All parties agree that

the Owner shall have the right, in its sole and absolute discretion, to withhold payment to the extent of any such fee or commission. The Contractor shall not be entitled to interest and shall not have any claim on account of any payments being withheld under this Paragraph 12.03 G.

12.04 Substantial Completion.

- A. Notice of Substantial Completion; Inspection by Architect. When the Contractor considers that the Work, or in the case of phased construction, such portion thereof which the Owner agrees in writing to accept separately, is substantially complete, the Contractor shall provide the Owner and the Architect written notification of such fact. The Contractor shall conduct a "pre-punch" inspection and shall submit a written and dated "pre-punch" list prior to requesting the formal Punch List Inspection by the Owner and the Architect. (The Contractor shall have the Job Superintendent and a representative from each of the major sub-contractors present at the Punch List Inspection) Upon receipt of the Contractor's "pre-punch" list and concurrence of the Owner's Field Inspector, the Architect and the Owner shall conduct the Punch List Inspection and shall prepare a comprehensive list of items to be completed and/or corrected. The Contractor shall proceed promptly to complete and correct items on the list. 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. Subsequently, the Architect and the Owner will make an inspection to determine whether the Work, or such designated portion thereof, is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.
1. Phased construction. Where the Work shall be performed in phases, Owner acceptance of each phase shall not occur until all of the following activities have taken place:
 - a. The Contractor shall perform a "pre-punch" inspection, shall notify the Owner upon completion of the inspection, and shall supply the Owner with a written and dated copy of its "pre-punch" list, which shall compile all deficiencies in the work observed by the Contractor.
 - b. The Owner and Architect shall review the "pre-punch" list and shall determine whether or not a "punch list" inspection shall take place.
 - c. Upon such determination, the Owner, the Architect and the Contractor (including the Job Superintendent and a representative from each of the major sub-contractors) shall conduct the "punch

list" inspection and shall compile a list of deficiencies for correction by the Contractor. The Contractor shall correct the deficiencies contained in the "punch list" in the time period indicated in Paragraph 12.04(B).

- d. The Contractor shall not proceed to the next construction phase until all items on the "punch list" have been corrected, and the Owner has agreed in writing to allow the Contractor to proceed to the next phase.

B. Punch List:

1. The Contractor shall have a maximum of sixty (60) days after the date of issuance of any punch list to complete all of the Work items contained thereon. Where the Project consists of discrete construction phases, the Contractor shall have a maximum of fourteen (14) days after the date of each punch list for each phase to complete the Work contained on the list. If the Work is not completed within the designated period, the sum of \$50.00 per day per punch list item will be deducted from the Contract Sum until the Date of Final Completion.
2. In the event that the Contractor refuses or fails to complete any one or more punch list items within the time period specified herein, then the Owner shall have the right (but not the obligation) to complete any such Punch List item with its own forces or with such other contractors as it deems advisable and to charge the account of the Contractor and its Surety therefore. This right of completion shall be in addition to, and not in lieu of, any remedy provided by another section of these Contract Documents. In the event the Owner exercises its right hereunder to complete all items on a Punch List, the \$50.00 daily amount shall not thereafter continue to be assessed for that Punch List item, although nothing contained herein shall be construed to eliminate or reduce the daily amount then accrued.

- C. Certification By Architect. When the Work, or any Owner-designated portion thereof, is substantially complete, the Architect shall prepare and issue a Certificate of Substantial Completion (substantially in the form of AIA Document 6704) which shall establish the date of Substantial Completion, the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate of Substantial Completion. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work, or such designated portion thereof, unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and to the Contractor for their written acceptance of responsibilities assigned to each of them therein.

- D. Payment by Owner. Upon Substantial Completion of the Work, or such Owner-designated portion thereof, and upon application by the Contractor and issuance of a Certificate of Substantial Completion by the Architect, the Owner shall make payment, less retainage, for such Work or such portion thereof as provided in the Contract Documents.

12.05 Final Inspection.

- A. Notice of Final Completion; Inspection by Architect. Upon written notification by the Contractor that the Work is finally complete, and upon the Contractor's submission of a final application for payment, the Architect will conduct a final inspection of the Work. When the Architect determines that the Work has been satisfactorily completed and the Contract Documents fully performed, he shall promptly prepare and issue a Final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of its observations and inspections, the Work has been completed in accordance with the Contract Documents and that the amount stated in the Final Certificate of Payment, less the Correction Retainage (as defined below), is due and payable.
- B. Payment by Owner; Correction Retainage. The Owner shall, within 45 days after receipt of the Final Certificate of Payment, pay the Contractor the amount stated therein, less a percentage of the Contract Sum based upon the following schedule:

Cost of Contract (\$5,000 minimum)	Retained %
Up to and including \$ 50,000	1.00%
Above \$50,000 to \$750,000 inclusive	0.75%
Above \$750,000 to \$1,250,000 inclusive	0.60%
Above \$1,250,000 to \$2,000,000 inclusive	0.50%
Above \$2,000,000 to \$3,000,000 inclusive	0.425%
Above \$3,000,000	0.4%

Such retained sum (the "Correction Retainage") shall be held by the Owner for a period of one year from the Date of Substantial Completion (the "Correction Period") as collateral security for the prompt and complete correction and/or performance by the Contractor of any and all Work determined by the Owner, in its sole and absolute discretion, to be defective, incomplete or to have been improperly performed. The Owner shall pay to the Contractor the Correction Retainage, less any amounts expended in accordance with Paragraph 12.05(D), within thirty days after the expiration of the Correction Period.

- C. Correction of Work by Contractor. In the event the Work, or any portion thereof, is determined during the Correction Period to be defective, incomplete or to have been improperly performed, the Contractor shall, within three days after written Notice from the Owner, commence to remove all defective and deteriorated Work and materials and replace it with Work and materials that conform in all respects with the requirements of the Contract Documents and to complete all incomplete

work in accordance with the Contract Documents within 14 days or such longer period as shall be requested by the Contractor and agreed-upon by the Owner.

- D. Contractor's Failure to Correct Work. In the event the Contractor fails to commence the removal, replacement, completion or correction of such Work within three days after the date of written Notice from the Owner and to complete such Work within the time period established in Paragraph 12.05(C), then the Owner will cause such work to be performed by other contractors and will deduct the cost of such Work from the Correction Retainage. In the event that the Correction Retainage is insufficient to cover such costs, then the Owner shall charge the Contractor and its Surety for the amount of the deficiency and the Contractor and/or the Surety shall pay such amount to the Owner in full on or before the date that is thirty days after the expiration of the Correction Period.

12.06 Final Payment Request. Neither final payment nor any retainage shall become due until the Contractor submits the following items to the Architect. (i) an affidavit that payrolls, bills for materials and equipment, and all other indebtedness in connection with the Work for which the Owner might be responsible have been paid or otherwise satisfied; (ii) a certificate evidencing that insurance required by the Contract Documents to remain in force following final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written Notice has been provided to the Owner; (iii) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents; (iv) consent of the Surety to final payment; and (v) if required by the Owner, other data establishing the payment or satisfaction of obligations (such receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract) and such guaranties and indemnities all in such form and detail as may be required by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner, in its sole and absolute discretion, sufficient to indemnify the Owner against any claim or lien. If any such claim remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such claim, including all costs associated therewith, including reasonable attorneys' fees.

12.07 Effect of Final Payment. The Contractor's acceptance of final payment constitutes a waiver of all claims against the Owner in connection with the Project, except for the Contractor's claim to the Correction Retainage, if any, when due. No payment, final or otherwise, shall operate to release the Contractor, or its Surety, from any obligations under the Contract.

PART 13 - PROTECTION OF PERSONS AND PROPERTY

13.01 Safety Program. The Contractor shall be responsible for instituting, maintaining and supervising prudent safety procedures, as well as for complying with all safety laws, regulations, ordinances and other directives of jurisdictional authorities in order to prevent injury, damage or loss to:

- A. All employees involved in performance of the Work;

- B. All students, teachers, administrative personnel, and employees, and other persons in proximity to, or otherwise affected by the Work;
 - C. The Work, materials and equipment to be incorporated therein, whether in storage on or off the Site;
 - D. Property at the Site or in proximity to the Work and which is designated to be maintain by the Contractor;
 - E. Property that is located on-site or in proximity to the Work and is designated to be altered, renovated or relocated by the Contractor.
- 13.02 Use of Explosives. The use of explosives shall be allowed only. (i) when necessary for the performance of the Work; (ii) when prior Notice is given to, and when the approval is received from, the Owner; and (iii) when conducted by qualified personnel in accordance with applicable safety laws and regulations.
- 13.03 Protection of Work. During performance of the Work and until final acceptance thereof, the Contractor shall be under an absolute obligation to protect the finished and unfinished Work against any damage, loss, or injury. The Contractor shall take proper precautions to protect the finished Work from loss or damage, pending completion and final acceptance of all Work included in the Contract. Such precautions shall not relieve the Contractor from any and all liability and responsibility for loss or damage to the Work occurring before final acceptance by the Owner. Such loss or damage shall be at the risk of and borne by the Contractor, whether arising from acts or omissions of the Contractor or others and whether or not covered by the Contractor's builder's risk insurance. In the event of any such loss or damage, the Contractor shall repair, replace, and make good the Work without extension of time. Therefore, the Contractor shall take special precautions throughout all its operations to guard against fire and shall reduce the amount of inflammable materials stored at the Site to the minimum amount consistent with the proper handling and storing of such materials.
- 13.04 Safety Representative. The Contractor shall select one or more on-site personnel whose duty shall be accident prevention. One such person shall be the Contractor's superintendent, unless otherwise designated by the Contractor in writing to the Owner and the Architect.
- 13.05 Structural Overload. The Contractor shall not structurally overload or permit any part of the Work to be overloaded so as to endanger its safety or the safety of others.

PART 14 - INSURANCE

- 14.01 Contractor's Statutory and Legal Liability Insurance.
- A. During the Contract Period, the Contractor shall, at its own expense, purchase and maintain insurance to provide coverage for claims resulting from the Contractor's performance of the Work. Such coverage shall extend to work performance by Subcontractors, persons or organizations directly or indirectly

hired by the Contractor or any Subcontractor in connection with the Work, or any other persons or organizations who may cause liability to be incurred by the Contractor or any Subcontractor in connection with the Work. Such coverage shall include the following:

1. Claims arising under workers' compensation, disability benefit, or other related benefits programs.
 2. Claims resulting from bodily injury, occupational illness or death of any employee performing the Work.
 3. Claims resulting from bodily injury, illness, disease, or death of any person in contact with the Work but who is not engaged as an employee.
 4. Claims arising under personal injury liability coverage for injury to any employee, which are directly or indirectly attributable to its employment for performance of the Work.
 5. Claims arising under personal injury liability coverage for injury to any person not an employee, which are attributable to performance of the Work.
 6. Claims arising for damage or destruction of tangible property, including loss of use of the affected property as a result of such damage or destruction.
- B. During the Contract Period, the Contractor shall, at its own expense, purchase and maintain the following insurance in the minimum limits specified with companies properly licensed to do business in the Commonwealth of Virginia, rated not less than A-/VII by A.M. Best Company and satisfactory to Owner. The Contractor shall maintain and provide proof of General Liability and Umbrella Excess Liability insurance for at least one (1) year following completion of the project. The Owner, "The Fairfax County School Board, its members, officers, authorized representatives and employees", shall be designated on each policy as "The Fairfax County School Board" as an additional named insured except for workers' compensation where the correct certificate of insurance coverage shall be furnished.
1. Workers' Compensation including Occupational Disease and Employer's Liability Insurance.
 - a. Statutory. Amounts and coverage as required by District of Columbia, Maryland, and Virginia Workers' Compensation Law, including provision for voluntary D. C. benefits as required in labor union agreements, and including the "All States" endorsement.
 - b. Employer's Liability.

Bodily Injury by Accident - \$100,000 Each Accident
Bodily Injury by Disease - \$500,000 Policy Limit
Bodily Injury by Disease - \$100,000 Each Employee

2. Commercial General Liability Insurance. Contractor shall provide coverage written on ISO occurrence form CG 00 01 10 01 (or a substitute form providing equivalent coverage) to include the following:
 - a. Contractual liability as required by the indemnification provision of Paragraph 5.11.
 - b. Personal injury liability, including offenses related to employment.
 - c. Coverage of explosion, collapse, or underground hazards.
 - d. Broad form property damage liability, including completed operations coverage.
 - e. Additional insured endorsement shall include coverage for Owner with respect to liability arising out of the completed operations of Contractor.
 - f. Additional Insured coverage shall apply as primary insurance and shall be non-contributory with respect to any other insurance or self-insurance programs afforded to Owner.
 - g. Status of the Owner as an insured shall not restrict coverage with respect to the escape of pollutants at or from a site owned or occupied by the Owner.
 - h. There shall be no endorsement or modification limiting the scope of coverage for liability arising from pollution.
 - i. Limits of Commercial General Liability Insurance.
 - (1) \$1,000,000 bodily injury and property damage per occurrence;
 - (2) \$1,000,000 personal injury and advertising injury per person;
 - (3) \$2,000,000 products/completed operations aggregate; and
 - (4) \$1,000,000 aggregate products and completed operations; and
 - (5) \$2,000,000 general aggregate, per project.

- ii. Business Auto Liability Insurance. (Includes owned, non-owned and hired vehicles.)
 - (1) Contractual liability coverage shall be included with respect to all auto rentals or lease agreements.
 - (2) Limits of \$1,000,000 combined bodily injury and property damage per accident.
- iii. Umbrella Excess Liability Insurance. Unless a different dollar limit is prescribed for this division of the Work in Section 01010, the lesser of \$5,000,000 or that amount which, when added to requirements of Paragraphs 14.01(B)(1), 14.01(B)(2), 14.01(B)(3) and 14.01(B)(4), total \$5,000,000. (For example, a \$4,000,000 umbrella in excess of the \$1,000,000 limits under the sections listed above shall meet the limits requirements of this paragraph). Coverage terms and conditions under the Umbrella Excess Liability Insurance policy shall be at least as broad as underlying coverages.
 - i. The limits of liability of the insurance described in Paragraph 14.01(B) may be superseded if the limits prescribed by law are greater.
 - j. Owner's Liability Insurance. The Owner may, at its own expense, purchase and maintain its own liability insurance to protect against claims which may arise in connection with the Work, or the Owner may self-insure such risks.

14.02 Property Insurance.

- A. The Contractor shall purchase and maintain property insurance upon the entire Work at the Site to the full insurance value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work, and shall insure against all risks of loss. Such insurance shall include, but not be limited to, coverage for the following:
 - 1. Loss by explosion of boilers during testing (any exclusion applicable to such loss shall be waived).
 - 2. Partial or complete occupancy by the Owner (any exclusion applicable to occupancy shall be removed).
 - 3. Loss without coinsurance penalty (coinsurance or similar "insurance to value" requirements shall be eliminated).

4. Coverage of property in transit and unscheduled locations sufficient in limits to adequately cover maximum anticipated values at risk.
5. Coverage of Contractor's labor, overhead and profit.

A copy of this policy of insurance shall be available upon written request by the Owner.

14.03 Notice of Insurance.

- A. Proof of insurance, satisfactory to Owner, for each type of coverage listed herein shall be provided within 10 days after the Contractor's receipt of the Award Letter, and no Work shall proceed unless all such insurance is in effect. The Contractor shall not allow any Subcontractor to commence Work on its subcontract until all such insurance of the Subcontractor has been so obtained and approved by the Contractor and found to be in accordance with the requirements set forth herein. The Contractor certifies by commencement of the Work that its insurance and that of Subcontractors is in effect and meets the requirements set forth herein.

14.04 Notice of Cancellation.

- A. All of the aforesaid insurance policies must be endorsed to provide that the insurance company shall give 30 days prior written Notice to the Owner if the policies are to be terminated or if any changes are made during the life of the Contract which will affect in any way the insurance requirements set forth herein.

14.05 Copies of Insurance Policies.

- A. Before commencing the Work, the Contractor shall cause its insurance carrier to provide the Owner with a certified copy of each policy that he and each of its Subcontractors shall carry in accordance herewith, together with receipted bills evidencing proof of premium payment.

14.06 No Waiver.

- A. Nothing contained herein shall have effect or shall be deemed to effect a waiver of the Owner's sovereign immunity under law.

PART 15 - CONTRACT SECURITY

15.01 Contract Security.

- A. The Contractor shall execute and deliver to the Owner Performance and Payment Bonds on the forms provided herein, each in an amount equal to the Contract Sum. The Performance and Payment Bonds shall be executed by a

solvent and responsible surety company licensed to conduct business in the Commonwealth of Virginia, named in the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department, and acceptable to the Owner. These bonds shall be issued and countersigned by a local authorized representative of such surety company who is a resident of the Commonwealth of Virginia, regularly commissioned and licensed in the Commonwealth and producing satisfactory evidence of the authority of the person or persons executing the bonds to execute them on behalf of the Surety. The Performance and Payment Bonds shall serve as security for the faithful performance of this Contract, and for the payment of all persons performing labor and furnishing materials and services in connection with this Contract. The premiums on the Performance and Payment Bonds shall be paid by the Contractor and shall be included in the Contract Sum.

- B. If at any time the Owner shall become dissatisfied with any Surety or Sureties upon the Performance and Payment Bonds, or if for any other reason such bond shall cease to be adequate security for the Contractor, the Contractor shall within five days after notification of such fact, substitute acceptable bonds in such form and sum and signed by such other sureties as may be satisfactory to the Owner. The premiums on such Bonds shall be paid by the Contractor and shall be included in the Contract Sum. No further partial payments shall be deemed due nor shall be made until the new sureties have qualified.
- C. The Contract Documents may require one or more of the Subcontractors to furnish payment and/or performance bonds.

PART 16 - UNCOVERING AND CORRECTION OF WORK

16.01 Uncovering of Work.

- A. If a portion of the Work is covered contrary to the Architect's request or to the requirements contained in the Contract Documents, the Contractor shall, at its own expense and upon the written request of the Architect or Owner, uncover and replace such Work without an adjustment to the Contract Period.
- B. If a portion of the Work has been covered which the Architect has not specifically requested to observe 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, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the costs of uncovering and replacing such Work shall be deducted from amounts then or thereafter due the Contractor and, if such amounts are insufficient to cover such costs, then the Contractor shall pay any such deficiency promptly following written demand by the Owner.

16.02 Correction of Work.

- A. The Contractor shall promptly correct any Work which is defective or otherwise fails to conform to the requirements of the Contract Documents (the "Rejected Work"), whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs associated with the correction of any Rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby.
- B. The Contractor's obligation to correct defective or non-complying Work shall continue for a period of one (1) year after the date of Substantial Completion. The time period of this obligation may be extended by terms of warranties or other circumstances where required by law. The Contractor shall correct the Work in accordance with Paragraph 16.02(A) promptly following receipt of a written request by the Owner.
- C. Nothing contained herein shall affect the Owner's right to correct nonconforming Work pursuant to Paragraph 12.05(D) hereof.

16.03 Acceptance of Defective or Nonconforming Work.

The Owner reserves the right to accept any defective or noncomplying Work; provided, however, that in such event the Contract Sum shall be reduced by an appropriate and equitable amount to account for such defect or noncompliance. Such adjustment shall be effected whether or not final payment has been made pursuant to Paragraph 12.05 hereof.

PART 17 - CONTRACTOR'S DEFAULT & TERMINATION

17.01 Owner's Right and Notice.

- A. The parties agree that:
 - 1. if the Contractor fails to begin the Work when required to do so; or
 - 2. if, at any time during the progress of the Work, the Contractor is not prosecuting the Work with reasonable speed and diligence, or is delaying the Work unreasonably or unnecessarily; or
 - 3. if the force of workmen or the quality or quantity of material furnished is not sufficient to insure completion of the Work within the Contract Period and in strict accordance with the Contract Documents; or
 - 4. if the Contractor fails to make prompt payments to suppliers or to Subcontractors for Work performed in connection with the Contract; or
 - 5. if the Contractor fails to cooperate in good faith with the Owner and/or any Separate Contractor, or in any manner of substance fails to observe the provisions of this Contract; or

6. if any of the Work, machinery, or equipment is defective and is not replaced as herein provided;

then the Architect shall certify such fact or condition to the Owner and the Owner, without prejudice to any other rights or remedies it may have hereunder, shall have the right to declare the Contractor in default in whole or in part. In the event the Owner elects to declare the Contractor in default, the Owner shall notify the Contractor and its Sureties by written Notice describing the nature of the default and providing the Contractor a right to cure such default within three calendar days after the date of the Notice, or within such longer period as the Owner, in its sole and absolute discretion, may prescribe. In the event the default is not cured within the time period specified by the Owner, the Owner shall have the right to take any actions necessary to correct or complete the Work, as set forth in Paragraph 17.03 hereof.

17.02 Contractor's Duty upon Default. Upon Notice from the Owner that he is in default hereunder, the Contractor shall discontinue all further operations in connection with the Work, or such specified part thereof, and shall immediately vacate the Site, or such specified part thereof, leaving untouched all plant, materials, equipment, tools, supplies and job site records, and shall cooperate fully with the Owner by providing the Owner with any keys or access devices used to gain entry to the Site.

17.03 Completion of Work after Default.

- A. If the Contractor defaults or neglects to perform the Work in accordance with the Contract Documents and fails within a three (3) day period after receipt of written Notice from the Owner to commence and continue correction of such default or neglect, the Owner may, without prejudice to the other rights the Owner may have, correct such defaults or deficiencies by such means and in such manner, by contract with or without public letting, or otherwise as it may deem advisable, utilizing for such purpose without additional cost to the Owner such of the Contractor's plant, materials, equipment, tools and supplies remaining on the Site, and also such Subcontractors as it may deem advisable and may take any or all of the following actions:
 1. delete part or parts of the Work from the Contract and contract to have it performed by others;
 2. supplement the Contractor's work force;
 3. withhold payments due the Contractor and use such payments to satisfy any claims for monies owed by the Contractor in connection with the Project, in accordance with Paragraph 12.03(B);
 4. replace or repair any defective Work, machinery or equipment;
 5. terminate the Contractor.

- B. The Contractor and his Sureties shall bear all costs associated with completing or correcting the Work, including without limitation, the cost of reletting, the amount of any liquidated damages, and any and all costs incurred in connection with the actions listed in this Paragraph 17.03. Any costs incurred in connection with completing or correcting the Work shall be deducted from the amounts then or thereafter due the Contractor. In the event such amounts are not sufficient to cover the costs incurred in connection with completing or correcting the Work, the Contractor and its Surety shall pay to the Owner the amount of any deficiency.
- 17.04 Partial Default. In the event the Owner declares the Contractor in default in accordance with the provisions of Paragraph 17.01 hereof with respect to a portion of the Work, the Contractor shall discontinue such portion of the Work declared in default, shall continue performing the remainder of the Work in strict conformity with the terms of the Contract and shall not hinder or interfere with any other contractor or persons whom the Owner may engage to complete the Work for which the Contractor was declared in default. The costs of such completion shall be paid by the Contractor and its Sureties as provided in Paragraph 17.03(B).
- 17.05 Owner's Right to Terminate for Cause. The parties agree that:
- A. if legal proceedings have been instituted by others than the Owner in such manner as to interfere with the progress of the Work and to potentially subject the Owner to the peril of litigation or outside claims; or
 - B. if the Contractor is adjudicated bankrupt or makes an assignment for the benefit of creditors; or
 - C. if in any proceeding instituted by or against the Contractor, an order is made or entered granting an extension of the time of payment, composition, adjustment, modification, settlement or satisfaction of its debts or liabilities; or
 - D. if a receiver or trustee is appointed for the Contractor or the Contractor's property; or
 - E. if the Contract or any part hereof is sublet without the prior written consent of the Owner; or
 - F. if the Contract or any rights, monies, or claims hereunder are assigned in whole or in part by the Contractor, otherwise than as herein specified; or
 - G. if the Work to be done under this Contract is abandoned; or
 - H. if the Contractor fails to cure any default declared pursuant to Paragraph 17.01 within the time period specified therefor;

then such fact or condition shall be certified by the Architect to the Owner and thereupon, without prejudice to any other rights or remedies the Owner may have, the

Owner shall have the right to terminate the Contract immediately upon written Notice to the Contractor.

If, after issuance of a Notice of termination of the Contract under the provisions of this Paragraph 17.05, it is determined for any reason that the Contractor was not in default under the provisions of Paragraph 17.05(A) through 17.05(H), or that cause for such termination otherwise did not exist under the provisions of Paragraph 17.05(A) through 17.05(H), then the rights and obligations of the parties shall be the same as if the Notice of termination had been delivered under the provisions of Paragraph 17.06 hereof; provided, however, that the Contractor in such event shall be deemed to have received seven days prior written Notice of termination. Any compensation thereupon owing to the Contractor under Paragraph 17.06 shall be offset by the cost of remedying any defective Work performed by or on behalf the Contractor. In no event shall the Contractor be entitled to recover anticipated profits or consequential damages of any kind in connection with any termination of these Contract Documents.

- 17.06 Owner's Right to Terminate for Convenience. The Owner shall have the right to terminate this Contract at its own convenience for any reason by giving seven days prior written Notice of termination to the Contractor. In such event, the Contractor shall be paid an amount equal to the lesser of. (1) the actual cost of any Work, labor or materials actually performed or in place and the actual cost of any labor, equipment or materials ordered in good faith which could not be canceled, less the salvage value thereof, plus 10%; or (2) the pro rata percentage of completion based upon the Schedule of Values (as described in Paragraph 12.02) plus the actual cost of any labor, equipment or materials ordered in good faith which could not be canceled, less the salvage value thereof. Each subcontract shall contain a similar termination provision for the benefit of the Contractor and the Owner. The Contractor shall not be entitled to receive anticipated profits on unperformed portions of the Work or consequential damages. The Owner and its authorized representatives shall have the right in accordance with the provisions of Paragraph 9.05 to verify any amounts claimed by the Contractor to be due under this Paragraph.

PART 18 - MISCELLANEOUS SPECIAL CONDITIONS

18.01 Laying Out Work.

- A. The Contractor shall, upon entering the Site of the Project for the purpose of commencing the Work, locate all general reference points and take all such action as is necessary to prevent their destruction; lay out the Work, except where otherwise required by Contract Documents, and be responsible for all lines, elevations, measurements of buildings, grading, paving, utilities and other Work executed by him under the Contract. The Contractor shall exercise proper and reasonable care in verifying figures shown on the Drawings before laying out the Work and will be held responsible for any error resulting from its failure to exercise such care.
- B. The Contractor shall establish permanent benchmarks referenced to finish floor lines. Contractor shall employ a licensed surveyor who shall, after masonry

corners have been set, certify over its seal to the Owner that the building is located properly in relation to property lines and in accordance with Drawings.

18.02 Inspection and Approval of Site Improvements.

- A. On-site and off-site improvements shall conform to the County of Fairfax Design and Construction Standards.
- B. The Contractor shall notify the Owner's field representative three days prior to the beginning of all street or storm sewer work.
- C. All work shall be staked out by a certified surveyor and cut sheets shall be submitted to the Department of Public Works with a copy to the Owner's Field Representative.
- D. The Contractor shall perform the Work in such a manner as to prevent the washing of any soil, silt or debris onto adjacent properties and he shall be held responsible for any damage resulting from its failure to prevent the washing of such materials upon adjacent properties for a period of one year after final acceptance of the completed Work.

18.03 Partial Use or Occupancy. The Contractor shall permit the Owner to use and occupy any completed or partially completed portion or unit of the Project prior to final acceptance by the Owner.

The Owner's use and occupancy shall not constitute final acceptance of the Work and shall in no event relieve the Contractor of its obligation to maintain the insurance coverage described in Part 14 hereof.

18.04 Release of Bonds. The Surety providing the bonds in connection with the Project shall obtain a written release from the Owner prior to the expiration date of the bonds.

18.05 No Asbestos. No materials or equipment containing asbestos shall be utilized in the construction of the Project.

END OF SECTION

SECTION 01010

SUMMARY OF WORK (ROOF REPLACEMENT)

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS: Drawings and general provisions of contract including General Conditions and other Division One through Division Sixteen Specifications Sections, apply to this section, with special attention to the following:
- A. Temporary Trailer Allowance: Section 01020
 - B. Applicable Standards: Section 01091
 - C. Temporary Utilities: Section 01510
 - D. Construction Aids: Section 01520
 - E. Barriers: Section 01530
 - F. Temporary Controls: Section 01560
 - G. Cleaning: Section 01710
 - H. Selective Demolition: Section 02070
- 1.02 SCOPE OF WORK COVERED BY CONTRACT DOCUMENTS
- A. Remove all existing roofing, related flashings and insulation to the deck. Provide new roofing, related flashings and insulation as indicated on the drawings. Contractor is responsible for field verifying all existing conditions. SEE SPECIFIC NOTES ON THE DRAWINGS.
 - B. Normal operations shall be maintained during the course of the school year. The FCPS school year calendar is attached for Contractor's reference.
- 1.03 CONTRACT METHOD
- A. Construction of the Work under a single lump sum contract.
- 1.04 CONTRACTOR USE OF PREMISES
- A. Limit use of premises for Work and for construction operations.
- 1.05 CONTRACTOR'S DUTIES
- A. Except as specifically noted, provide and pay for:
 - 1. Labor, materials, and equipment.

2. Tools, construction equipment, and machinery.
 3. Water, heat, and utilities including electrical power required for construction.
 4. Other facilities and services necessary for proper execution and completion of work.
- B. Temporary Power and Lighting: Provide in accordance with Section 01510
- C. Pay legally required sales, consumer and use taxes.
- D. The Owner shall obtain and pay for the General Building Permit. The Contractor shall obtain and pay for all other permits required by law for the execution of this Work.
- E. The Contractor shall also obtain and pay for certificates, inspections including but not limited to Fire Marshal's review and inspection fees and other legal fees required, both permanent and temporary, including plumbing, mechanical, sprinkler, electrical and highway permits. NOTE: Sewer frontage or availability and water frontage and tap-on fees or charges will be paid by Owner.

1.06 COORDINATION

- A. Perform survey of existing site and building prior to commencing demolition work or other work affecting existing facilities.
- B. Coordinate performance of work with school principal and staff in order to minimize disruption of normal activities during school hours. Operations requiring access to the existing facility that would cause such disruption will be scheduled for evening hours, summer recess or school holidays.
- C. Coordinate the work for the various sections of Specifications to ensure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- D. Verify that the characteristics of elements of interrelated operating equipment are compatible; coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduits, as closely as practicable; make runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

- F. In finished areas conceal pipes, ducts, and wiring in the construction. Coordinate locations of fixtures and outlets with finish elements.

1.07 FIELD ENGINEERING

- A. Provide field engineering service; establish grades, lines, and levels, by use of recognized engineering survey practices.
- B. Control datum for survey is that established by Owner-provided survey. Locate and protect control and reference points.

1.08 REFERENCE STANDARDS

- A. For Products specified by association or trade standards, comply with requirements of the standards, except when more rigid requirements are specified or required by applicable codes.
- B. The date of the standard is that which was in effect as of the Bid date, unless a specific date is indicated.
- C. Obtain copies of standards when required by Contract Documents. Maintain copy at job site during progress of the specific work. Refer to Section 01091, Applicable Standards.

PART 2 - SCHEDULE OF COMPLETION

2.01 CONSTRUCTION TIME

- A. All work shall be substantially completed and certified according to the following schedule:

LOCATION	START	SUBSTANTIAL COMPLETION	FINAL COMPLETION
McLean High School	June 17, 2023	August 12, 2023	September 30, 2023

- B. Liquidated Damages:
 1. Total Project: Should the Work not be performed on or before the times stated, there will be deducted from the Contract Balance the sum of One Thousand Dollars (\$ 1000.00) per consecutive calendar days, as Liquidated Damages, but not as a penalty, for each day's delay after expiration of such period, and until final completion of the Work and its acceptance by the Owner.

2. Work phases: Should the Work of each phase not be performed on or before the completion dates established by the Work Sequence, there will be deducted from the contract balance the following sums for each phase, per consecutive calendar days, as Liquidated Damages, but not as a penalty, for each day's delay after expiration of the completion dates, and until acceptance by the Owner:
3. Submittals required under section 01340: Should submittals not be received by the architect within the time periods indicated in Section 01340, there will be deducted from the contract balance the sum of one hundred dollars (\$100.00) per consecutive calendar days, per submittal, as liquidated damages, but not as a penalty, for each day beyond the allowable time periods.

PART 3 - USE OF PREMISES

3.01 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall coordinate use of premises under direction of Owner's Representative.
 1. The Contractor shall maintain a drug free workplace for all his employees and subcontractors. The possession and/or use of drugs and alcohol are strictly forbidden on school property and shall constitute grounds for immediate removal from the project site (Refer to Section 00700, General Conditions, 5.02C and 5.16).
 2. Smoking, use of improper language and fraternization by contractor's employees with students and staff are prohibited and shall constitute grounds for immediate removal from the project site (Refer to Section 00700, General Conditions, 5.02C).
- B. Contractor shall assume full responsibility for protection and safekeeping of Products under this Contract stored on the site.
- C. Contractor shall move any stored Products, under Contractor's control, which interfere with operations of the Owner.
- D. Contractor shall, at his option, obtain and pay for the use of additional storage or work areas needed for operations.
- E. Contractor shall limit his use of the existing building for work and for storage to allow for:
 1. Owner Occupancy
 2. Public Use

- F. Contractor shall provide temporary toilet facilities for use by his employees and other workers associated with the project. Contractor shall provide and maintain enough toilets to comply with OSHA and ANSI standards: 20 or less workers require 1 toilet, 20 or more require 1 toilet and 1 urinal per 40 workers, 200 or more require 1 toilet and 1 urinal per 50 workers. Toilets that are not maintained in a usable, sanitary condition shall not be considered "provided" or "available". The use of existing facilities is not permitted.
- G. In order to work overtime, a minimum of five (5) workers, excluding foreman and superintendent, must be available and willing to work. No overtime shall be allowed if this minimum crew size cannot be guaranteed.

3.02 WORK IN, OR ADJACENT TO, EXISTING OR OCCUPIED AREAS

- A. Integrity of Existing Facility
 - 1. Conduct operations to maintain the existing building in a secure, weather tight condition.
 - 2. Repair damage to existing structures, equipment and furnishings resulting from the Contractor's operations within the building and on the site.
 - 3. Where corridor ceilings have been removed and sprinkler mains have been installed to serve renovated space or new additions, sprinkler heads shall be temporarily installed and activated in the upright position and shall remain in the upright position until the ceiling concealment inspection has occurred, and the finished ceilings in those corridors can be completed.
- B. Safety and Integrity of Occupied Areas
 - 1. Where corridors shall be maintained for occupant use, no construction materials shall be stored or stockpiled. No Construction materials shall be stored in a manner that restricts means of egress which are required be remain open for use by building occupants.
 - a. A minimum clear corridor width of 72" shall be maintained in all active corridors.
 - 2. All existing emergency exit lights and fire alarms shall remain operational in occupied areas.
 - 3. Means of egress for occupied areas shall be maintained with hard surfaced, non-slip walkways, ramps or other platforms. Use temporary handrails, barricades or canopies in accordance with Construction Phasing Plan requirements and requirements of Section 01520.

4. No work such as welding, soldering, or cutting, which is considered hazardous to the building occupants, shall take place in occupied areas during school operating hours.
5. Contractor shall take all necessary safety precautions to clearly delineate the construction areas with temporary barricades, dust partitions, and temporary construction fences as appropriate (See Section 01520, Construction Aids and Section 01530, Barriers).
6. Temporary partitions shall be dustproof partitions extending from floor to underside of deck. Doors through these partitions shall be lockable and self-closing.
7. Use temporary fencing to isolate on-site staging areas, storage yards and construction access ways. All temporary storage areas and construction trailers shall be enclosed with 6' high construction fences. Refer to 2.03, Temporary Enclosures, Section 01520.
8. No pneumatic, gas powered or other noise producing equipment, or other equipment powered by flammable fuels shall be allowed in occupied or renovation areas before or during normal school hours. Use of this equipment shall be permitted after normal schools' hours and weekends only. Comply with OSHA 1926.850.
 - a. Temporary heat shall be supplied by electric heaters only.
9. No hoisting shall be allowed over the school building during normal school hours or other times when the building is occupied for school related activities or other events.
10. Fire extinguishers are required in all construction areas. Comply with OSHA 1923.150.
11. Do not perform any work, including demolition, during normal school hours (or during times when school related activities or other events are being conducted) that could cause the fire alarm to be inadvertently activated. Do not perform any work during these times that could negatively impact operational sprinkler systems.
12. Roofing tanker trucks shall not be placed near windows and/or fresh air intakes of occupied areas. No roofing shall take place above occupied areas.
13. Where VAT (vinyl asbestos tile) and/or other asbestos containing materials (ACM) require removal prior to installation of new VCT flooring or where other work disturbs ACM, such removal shall be done under separate contract by Fairfax County Public Schools, except as noted in Section 02070 (See Section 02070, Selective Demolition).

14. All painting performed by spray application shall be done only when the building is unoccupied.
15. Do not locate masonry saws near any window or door opening or near a fresh air intake. Locate saws in fenced construction areas only.
16. Use of school supplies or school equipment by the Contractor is prohibited.
17. Where existing windows and/or doors are removed, and new replacement windows and/or doors are not available, the Contractor shall provide secure plywood coverings over the openings. No wall openings of any kind, no matter how small, shall be left uncovered after completion of a work shift.
18. No loud construction activities shall be allowed during school hours. Workers shall not operate radios, CD players, or "boom boxes" in the school building.

C. Scheduling and Operations

1. Schedule deliveries to avoid conflicts with morning student arrivals and afternoon student departures. Coordinate with the school to determine actual starting and ending times and approximate time periods for arrival and departure. No deliveries shall be allowed during these periods.
2. No work shall be allowed in corridors in occupied areas during school operating hours. Work such as cutting, demolition and patching, use of ladders and scaffolding, and presence of construction materials in these corridors between the hours of 6:00 AM and at least 30 minutes after scheduled release of students shall not be allowed.
3. Elementary Schools: No work shall be allowed in a corridor in an occupied area which is adjacent to, and provides access to, SACC (School-Aged Child Care) Rooms between the hours of 7:15 AM and 6:15 PM.
4. For each work phase, the Contractor shall remove and temporarily store all loose equipment, furniture and boxes within the rooms being renovated in an approved, designated location on the site. The school will be responsible for boxing and tagging all items prior to removal and storage. At the completion of the work phase, the Contractor shall move the stored items to their final location as directed by the Owner's Field Representative. The Contractor can expect the following inventory as typical equipment for removal, storage and relocation, which includes but is not limited to:

- a. Classrooms: Approximately 30 desks, 30 chairs, 1 teacher wardrobe unit, teacher desk and chair, 2 file cabinets and 2 bookcases.
- b. Computer Labs: Approximately 30 computer desks and 30 chairs.
- c. Administrative and Guidance Offices: Approximately 1 desk, 1 chair, 1 credenza, and 1 bookshelf for each office.
- d. Subschool Offices (High School): Approximately 1 desk, 1 chair, 1 credenza and 1 bookshelf for each office.
- e. Itinerant and Miscellaneous Offices: Approximately 1 desk, 1 chair, 1 credenza and 1 bookshelf for each office.
- f. Library (Elementary School): Approximately 250 boxes, 10 tables, 40 chairs, 3 desks and 3 chairs for staff.
- g. Library (Middle School): Approximately 350 boxes, 15 tables, 60 chairs, 3 desks and 3 chairs for staff.
- h. Library (High School): Approximately 500 boxes 25 tables, 100 chairs, 4 lounge chairs, 3 desks and 3 chairs for staff.
- i. Kitchen (Elementary School): Approximately 2 work tables, 2 pan racks, 3 carts, 8 pan carriers, 2 dunnage racks, 2 ice cream cabinets, 2 milk coolers, 8 mobile shelving units and other miscellaneous equipment.
- j. Kitchen (Middle School): Approximately 3 work tables, 6 pan racks, 4 carts, 14 pan carriers, dunnage racks, 3 ice cream cabinets, 3 milk coolers, 10 mobile shelving units and other miscellaneous equipment.
- k. Kitchen (High School): Approximately 6 work tables, 6 pan racks, 4 carts, 14 pan carriers, 2 mixers, 1 slicer, 1 lidding machine and conveyor, 30 dunnage racks, 5 ice cream cabinets, 5 milk coolers, 20 mobile shelving units and other miscellaneous equipment.
- l. Gymnasium (Elementary School): Mats, portable game standards, equipment transporters and other miscellaneous equipment.
- m. Gymnasium (Middle School): Landing mats, portable game standards, fitness room equipment, equipment transporters and other miscellaneous equipment.

- n. Gymnasium Complex (High School): Pommel horses, wrestling mats, landing mats, balance beams, parallel bars, portable game standards, equipment transporters, weight room equipment (such as bench, leg and shoulder presses, weight sets, plate racks) and other miscellaneous equipment.
5. Do not start demolition of occupied space until the materials required for renovation are on the project site. The list of materials includes: floor finishes and base, millwork (pencil sharpener blocks, map rack blocking, etc), paint, doors and hardware, windows and venetian blinds, ceilings, power and lighting, HVAC equipment and controls, clocks, sound system, fire alarm system, security system, intercommunications system, telecommunications system, and sprinkler system.
 6. Do not install doors unless all hardware and vision panel glass for the doors is on the project site.
 7. Contractor shall postpone or reschedule work to a later shift and/or weekends and holidays whenever such work would disrupt or interfere with student testing, such as SAT (Scholastic Aptitude Test) or SOL (Standards of Learning) tests. Contractor shall coordinate with school staff or Liaison for actual dates and times of testing.
- C. Cleaning
1. Dust and mop corridors every morning before teachers arrive. Dust and mop any areas made dirty by construction operations on a daily basis.
 2. Contractor shall immediately remove construction equipment and debris and clean any work zone located in an occupied area, once the work is completed or halted for a significant period of time.
 3. Contractor shall provide consistent and frequent (daily) vacuuming to minimize and control dust levels in work areas (See Section 01710, Cleaning).
- E. Systems Maintenance
1. Where the sequence of work requires work to be continuously performed in existing corridor ceiling spaces in occupied areas, tie all light fixtures at each corner of fixture to existing joists above, tie all smoke detection devices as close to structure as possible, and secure all security, intercommunications, telecommunications, and other active wiring which is not housed in conduit.
 2. Do not remove existing wiring such as CATV, intercommunications, telecommunications, etc until the new wiring is in place and operational.

3. Prior to installation, Contractor shall obtain approval from Owner's Field Representative to run temporary wiring.
4. Inspect and change filters in HVAC equipment frequently during construction and prior to occupancy by Owner. Owner will not occupy any renovated area unless the entire HVAC system (including exhaust systems and automatic temperature controls) is operational.
5. All PRVs shall be fully operational at all times. Do not demolish any existing PRVs until replacement units are on site and new wiring is installed and ready for connection.

3.03 OWNER OCCUPANCY

- A. The Contractor shall schedule his operations for completion of portions of the Work, for the Owner's occupancy upon Substantial Completion of the entire Work.
- B. The Contractor agrees to permit the Owner to use and occupy a portion or unit of the project prior to formal acceptance of the total project by the Owner, provided the Owner:
 1. Secures written consent of the Contractor (except in the event in the opinion of the Architect, the Contractor is chargeable with unwarranted delay in final cleanup of punch list items or other contract requirements, the Owner may occupy without Contractor's consent);
 2. Secures endorsement from the insurance carrier and consent of the surety to permit occupancy of the building or use of the project during the remaining period of construction.
- C. Owner will occupy the premises during the normal 10-month school year for the conduct of his normal operations. Cooperate with Owner's Representative in all construction operations to minimize conflict and to facilitate continued owner usage.

PART 4 - PRECAUTIONS AND SAFETY

4.01 SPECIAL REQUIREMENTS

- A. Fire Protection: Provide and maintain an adequate number of hand fire extinguishers at convenient and appropriate locations during construction. Avoid all accumulations of flammable debris by removing rubbish promptly. Take all other precautions necessary to prevent fire. Supervise closely the storage of paint materials and other combustible products.

1. Existing fire alarm and detection system must remain operable at all times during construction.
- B. Accident Prevention and Safety: Comply will all applicable laws, ordinances, rules, regulations and orders of governing authorities having jurisdiction for the safety of persons and property to protect them from damage, injury or loss. Erect and maintain, as required by conditions and progress of the work, all necessary safeguards for safety and protection, including fences, railings, barricades, lighting, posting of danger signs and other warnings against hazards. Where prevention of construction accidents is not regulated by code or ordinances, comply with AGC's "Manual of Accident Prevention in Construction." Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Project. All scaffolds shall be built in accordance with all requirements of local, state and Federal laws and regulations.
- C. Crisis Preparedness – "Shelter in Place"
1. FCPS has developed a "Shelter in Place" procedure to protect students, teachers, administrative staff and construction workers in the event that a dangerous chemical or biological agent is released into the environment during occupied hours.
 2. Upon notification by Public Safety Officials, all individuals on school grounds shall be directed to move indoors. All windows and doors shall be closed and locked. All heating, ventilating and air conditioning systems shall be shut down.
 3. "Shelter in Place" emergencies are generally of short duration (several minutes to one or two hours). All individuals shall remain inside until Public Safety Officials have deemed that the area is safe.
 4. It is the General Contractor's responsibility to familiarize his employees and subcontractors with the school's "Shelter in Place" plans and procedures. Note that once an emergency has been declared, no workers, subcontractors or suppliers who may be in transit to the job site shall be allowed into the area until the emergency is over.
- D. ID Badges: The Owner shall supply identification badges which shall be worn by all tradesmen working on this project. No employees of the Contractor, subcontractors or sub-contractors, material suppliers or other persons associated with the project shall enter the existing school building or school property without an approved identification badge. Failure to comply with this requirement will be cause for immediate and permanent removal of the employee(s) in question from this and any other school building. Contractor shall maintain an identification badge log and record each badge number and to whom it was given and when.

1. Badge shall be a minimum 2" x 3 1/2".
 2. Visible at all times.
 3. Bright color (orange, lime green, etc.)
- E. See paragraph 3.02, this Section, for additional specific precautions or restrictions related to safety.

END OF SECTION

SECTION 01020

ALLOWANCES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. This Section pertains to the provision of all items of Work which may or may not be defined in other Sections but shall be provided in the Contract Price as defined by the allowances specified in Part Two of this Section.

1.03 REQUIREMENTS

- A. **Basis of Quantity Allowances:** The stated quantity allowances represent the complete estimate of material or items contemplated to be furnished and installed in the Project. The Contract Price shall include all storage or additional transportation costs due to timing of delivery and installation.
- B. **Guarantee for Allowances:** All allowance materials or items shall be included in the Contractor's guarantee for the Project.
- C. All overhead, profit, taxes, licenses, fees or other expenses related to the purchase and installation of the referenced allowance materials or items shall be included in the base bid, except for work covered by the contingency allowance.
- D. Any money remaining in the Allowances at the close of the project shall be credited to the Owner.
- E. No samples, Shop Drawings, or catalog cuts of allowance items will be reviewed unless the total cost or unit price is included with the Contractor's submission.
- F. Contractor shall obtain Owner's written approval to exceed any allowance amount prior to ordering materials or performing the work involved.

PART 2 - ALLOWANCES

2.01 LIST OF ALLOWANCES:

- A. **Contingency Allowance: \$25,000.00**
 - 1. The cost of any items paid for out of this allowance shall be confirmed by a Change Order including materials, labor, insurance, payroll taxes,

supervision, bond premium costs, transportation, equipment rental, etc., and the percentages for overhead and profit set forth in the Conditions of the Contract. Contractors shall not include any additional mark-up on the allowance in the bid.

END OF SECTION

SECTION 01040

SUPERVISION AND COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract including General Conditions and other Division 1 Specification Sections, apply to the work of this Section.

1.02 RELATED WORK

- A. Section 01153: Change Order Procedures.
- B. Section 01340: Shop Drawings, Product Data and Samples.

1.03 DESCRIPTION OF WORK

- A. Contractor shall employ and pay for the services of a full time, qualified Project Superintendent, located at the project site, dedicated solely to the project, for the duration of the construction work.
- B. Qualifications of Project Superintendents:
 - 1. Experienced in field work of the type required for this Project.
 - 2. Submit name and address to Architect/Engineer.

1.04 PROJECT MANAGER'S RESPONSIBILITIES

- A. Implement Change Order procedures in accordance with Section 01153.
- B. Assist Project Superintendent(s) with schedules, material deliveries and subcontractor coordination and scheduling.
- C. Participate in Progress Meetings

1.05 PROJECT SUPERINTENDENT RESPONSIBILITIES

- A. Coordinate the work of the Contractor and the Subcontractors for the work of all trades.
- B. Coordinate the schedules of the Contractor, the Subcontractors and materials and equipment suppliers.
- C. Verify timely deliveries of products for installation by the trades.
- D. Verify that labor and materials are adequate to maintain schedules.

- E. Conduct conferences and maintain communications with Subcontractors, suppliers, and other concerned parties as necessary to:
 - 1. Maintain coordination and schedules.
 - 2. Resolve matters in dispute.
 - F. Participate in Project Meetings.
 - G. Report progress of work. Submit daily report to Owner's Representative listing number and type of work force and work in progress.
 - H. Recommend needed changes in Schedules.
 - I. Assist in compiling and assembling Project Record Information.
 - J. Observe required testing. Maintain a record of tests including:
 - 1. Testing agency and name of inspector.
 - 2. Subcontractor.
 - 3. Manufacturer's representative present.
 - 4. Date and time of testing.
 - 5. Type of product or equipment.
 - 6. Type of test, and results.
 - 7. Retesting required.
 - K. Verify that Subcontractors maintain accurate record documents.
 - L. Attend all punch list inspections.
- 1.06 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES
- A. Prior to submittal, review for compliance with Contract Documents. Contractor shall stamp submittals approving them for materials, fit and coordination, prior to submission to Architect.
 - B. Check field dimensions and clearance dimensions.
 - C. Check relation to available space.
 - D. Check anchor bolt settings.

- E. Review the effect of any changes on the work of other contracts or trades.
- F. Check compatibility with equipment and work of other trades.

END OF SECTION

SECTION 01045
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provision of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 DESCRIPTION

- A. Contractor shall be responsible for all cutting, fitting, and patching, including attendant excavation and backfill, required to complete the work and to:
 - 1. Make its several parts fit together properly.
 - 2. Uncover portions of the Work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to requirements of Contract Documents.
 - 5. Remove samples of installed work as specified for testing.
 - 6. Provide routine penetration of non-structural surfaces for installation of piping and electrical conduit.
- B. Related Requirements in other parts of the project manual:
 - 1. Basic responsibilities of other parties: General Conditions Section 00700.

1.03 RELATED WORK

- 1. Summary of Work: Section 01010.
- 2. Construction Aids: Section 01520
- 3. Barriers: Section 01530
- 4. Selective Demolition: Section 02070

1.04 SUBMITTALS

- A. Submit a written existing building survey to Architect and the Owner's Representative prior to any work being started.

- B. Submit a written request to Architect and the Owner's Representative well in advance of executing any cutting or alteration which affects:
 - 1. The work of the Owner or any separate contractor.
 - 2. The structural value or integrity of any element of the Project.
 - 3. The integrity or effectiveness of weather-exposed or moisture resistant elements or systems.
 - 4. The efficient, operational life, maintenance or safety of operational elements.
 - 5. The visual qualities of the sight-exposed elements.
- C. Submit a written notice to Architect and the Owner's Representative designating the date and the time the work will be uncovered.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Comply with specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

- A. General Contractor shall conduct an existing building survey with the Owners representative prior to any construction operations. A written report shall be made of existing project conditions, including elements subject to damage or to movement during cutting of patching.
- B. After uncovering work inspect the conditions affecting installation of products, or performance of the work.
- C. Report unsatisfactory or questionable conditions to the Architect and the Owner's Representative in writing; do not proceed with the work until the Architect and the Owner's Representative have provided further instructions.
- D. Verify that areas to be demolished are unoccupied and discontinued in use.
- E. Verify that all utilities within the area to be demolished have been cut off and capped.
- F. Do not commence work until conditions are acceptable to Architect and Owner's Representative.

3.02 PREPARATION

- A. Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.
- B. Provide devices and methods as necessary to protect other portions of the Project from damage.
- C. Provide protection from the elements for that portion of the Project which may be exposed by cutting and patching work and maintain excavations free from water.
- D. Remove items scheduled to be salvaged for Owner, and place in designated storage area.

3.03 PERFORMANCE

- A. Execute cutting and demolition by methods that will prevent damage to other work and will provide proper surfaces to receive installation of repairs.
- B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.
- C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- D. Restore work that has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.
- E. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through walls, floors, roofs and other surfaces.
- F. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish the entire unit.
- G. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools during school hours.
- H. Do not use power-driven impact tools in or near occupied areas during school hours (see Section 01010, Summary of Work).

END OF SECTION

SECTION 01091

APPLICABLE STANDARDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 through Division 16 Specification Sections, apply to this Section.

1.02 RELATED WORK

- A. Specific naming of codes or standards occurs in other sections of these specifications.

1.03 DESCRIPTION

- A. Throughout the Contract Documents, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.
- B. Where materials or workmanship are specified in the Contract Documents to meet or exceed the specifically named code or standard, it is the Contractor's responsibility to provide materials and workmanship which meet or exceed the specifically named code or standard.
 - 1. It is the Contractor's responsibility, when so required by the Contract Documents or by written request from the Architect, to provide all required proof that the materials or workmanship, or both, meet or exceed the requirements of the specifically named code or standard. Such proof shall be in the form requested in writing by the Architect, and generally will be required to be copies of a certified report of tests conducted by a testing agency approved for that purpose by the Architect.
- C. The most current adopted edition of the individual standards or test procedures, published by the associations establishing applicable standards, and referenced throughout the Contract Documents, shall apply. Exception: The edition of the VUSBC governing the Contract Documents shall be that edition which was in force for purposes of permit review and issuance by Fairfax County Department of Public Works and Environmental Services (DPWES).

1.04 QUALITY ASSURANCE

- A. Familiarity with pertinent codes and standards: In procuring all items used in this Work, it is the Contractor's responsibility to verify the detailed requirements of the specifically named codes and standards and to verify that the items procured for use in this Work meet or exceed the specified requirements.

- B. Rejection of non-complying items: The Architect reserves the right to reject items incorporated into the Work which fail to meet the specified minimum requirements. The Architect further reserves the right, and without prejudice to other recourse the Architect may take, to accept non-complying items subject to an adjustment in the Contract Amount as approved by the Architect and the Owner.

1.05 APPLICABLE INDUSTRY AND CODE REFERENCE STANDARDS

- A. Applicable standards listed in the Specifications include, but are not necessarily limited to, standards promulgated by the following agencies and organizations:
1. AAMA - American Architectural Manufacturers Association, 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173-4268. 1-847-303-5664.
 2. AASHTO - American Association of State Highway and Transportation Officials, 444 N. Capitol St., N.W., Suite 249, Washington, D.C. 20001. 1-202-624-5800.
 3. ACI - American Concrete Institute, 38800 Country Club Drive, Farmington Hills, MI 48333-9094. 1-248-848-3700.
 4. AGA - American Gas Association, 400 N. Capitol Street., N.W., Washington, D. C. 20001. 1-800-841-8430.
 5. AISC - American Institute of Steel Construction, Inc., One East Wacker Drive, Suite 3100, Chicago, IL 60601-2001. 1-312—670-2400.
 6. ICC/ANSI A117.1-2003 - American National Standards Institute, Inc. 25 West 43rd Street, Fourth Floor, New York, NY 10036. 1-212-642-4900.
 7. ASTM - American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. 1-610-832-9585.
 8. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE), 1791 Tullie Cir., N.E., Atlanta, GA 30329. 1-800-5-ASHRAE.
 9. AWI - Architectural Woodwork Institute, 1952 Isaac Newton Square W., Reston, VA 20190. 1-703-733-0600.
 10. AWS - American Welding Society, Inc., 550 N.W., Lejuene Road, Miami, FL 33126. 1-800-433-9353.
 11. BIA - Brick Industry Association, 11490 Commerce Park Drive, #300, Reston, VA 22091-1525. 1-703-620-0010.

12. BHMA – Builder’s Hardware Manufacturers Association, 355 Lexington Ave., 17th Floor, New York, NY 10017. 1-212-297-2122.
13. CRI – Carpet and Rug Institute, 310 Holiday Ave., P.O. Box 2048, Dalton, GA 30722. 1-800-882-8846.
14. CRSI - Concrete Reinforcing Steel Institute, 933 North Plum Grove Road, Schaumburg, IL 60173-4758. 1-847-517-1200.
15. CS - Commercial Standard of NIST, U.S. Department of Commerce, Government Printing Office, Washington, D.C. 20402.
16. DHI – Door and Hardware Institute, 14150, Newbrook Dr., Suite 200, Chantilly, VA 20151-2223. 1-703-222-2410.
17. Glass Association of North America, 2945 S.W. Wanamaker Dr., Suite A, Topeka, KS 66614. 1-785-271-0208.
18. International Building Code, International Code Council, Inc., in cooperation with Building Officials and Code Administrators International, Inc., 4051 West Flossmoor Road, Country Club Hills, IL 60478-5795, 1-800-214-4321 (as incorporated into the Virginia USBC).
19. MFMA – Maple Flooring Manufacturers Association, 60 Revere Dr., Suite 500, Northbrook, IL 60062. 1-847-480-9138.
20. NAAMM - The National Association of Architectural Metal Manufacturers, 8 South Michigan Avenue, Suite 100, Chicago, IL 60603. 1-312-332-0405.
21. NCMA - National Concrete Masonry Association, 2302 Horse Pen Road, P.O. Box 781, Herndon, VA 20171-3499. 1-703-713-1900.
22. NEC - National Electrical Code (See NFPA).
23. NEMA - National Electrical Manufacturers Association, 660 White Plains Rd., Suite 600, Tarrytown, NY 10591. 1-914-524-8650.
24. NFPA - National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02269. 1-800-344-3555.
25. NIST - National Institute of Standards and Technology, Office of Standards Service, 100 Bureau Dr., Gaithersburg, MD 20899. 1-301-975-2758.
26. NRCA - National Roofing Contractors Association, 10255 West Higgins Road, Suite 600, Rosemont, IL 60018-5607. 1-847-299-9070.

27. NSF - National Sanitation Foundation, 3475 Plymouth Road, Ann Arbor, MI 48105.
28. NTMA – National Terrazzo and Mosaic Association, 110 E. Market St., Suite 200A, Leesburg, VA 20176. 1-800-323-9736.
29. OSHA - Occupational Safety and Health Administration, US Dept. of Labor/OSHA, 200 Constitution Avenue, N.W., Washington, D.C. 20210. 1-202-693-1999.
30. PCA - Portland Cement Association, 5420 Old Orchard Road, Skokie, IL 60077-1083. 1-847-966-6200.
31. SMACNA - Sheet Metal and Air-Conditioning Contractors Association International, 4201 Lafayette Center Dr., Chantilly, VA 20151. 1-703-803-2980.
32. SDI - Steel Deck Institute, P.O. Box 25, Fox River Grove, IL 60021-0025. 1-847-458-4647.
33. SDI - Steel Door Institute, 30200 Detroit Road, Cleveland, OH 44145-1967. 1-440-899-0010.
34. SJI - Steel Joist Institute, 3127 10th Avenue, North, Myrtle Beach, South Carolina 29577-6760. 1-843-626-1995.
35. SSPC - Steel Structures Painting Council, 40 24th Street, 6th Floor, Pittsburgh, Pennsylvania 15222-4656. 1-412-281-2331.
36. TCA - Tile Council of America, Inc., 100 Clemson Research Boulevard, Anderson, SC 29625. 1-864-646-TILE.
37. UL - Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, Illinois 60062-2096. 1-877-854-3577.
38. VDOT - Virginia Department of Transportation, P.O. Box 256, 2400 Pine Forest Drive, Colonial Heights, Virginia 23834.
39. Federal Specs and Federal Standards - General Services Administration, Specification Section, Room 6654, 7th & D Streets S.W., Washington, D.C. 20407.
40. VUSBC - Virginia Uniform Statewide Building Code.
41. 2010 ADA Standards for Accessible Design. Department of Justice 800-514-0301

42. Fairfax County Special Inspections Program: Special Inspections: Implementation in Fairfax County – 2015 Edition (2015-SIP), as administered by the Fairfax County Critical Structures Section, Department of Public Works and Environmental Services.
43. Fairfax County "Public Facilities Manual" (PFM).
44. Commonwealth of Virginia, "Erosion and Sediment Control Handbook."
45. VA CHPS-Virginia Collaborative for High Performance Schools, 2443 Fair Oaks Blvd. # 259, Sacramento, CA 95825.

1.06 JOB SITE ACCESS

- A. The Contractor shall provide one (1) copy of all reference standards at the job site for review by the Architect and Owner's Representative.

END OF SECTION

SECTION 01152

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and Division 1 Specification Sections, apply to the Work of this Section.

1.02 DESCRIPTION

- A. Submit Applications for Payment to Architect in accordance with the schedule established by Conditions of the Contract and Agreement Between Owner and Contractor.

1.03 RELATED WORK

- A. Lump Sum Price: Agreement Between Owner and Contractor.
- B. Progress Payments, Retainages, and Final Payment. General Conditions, Section 00700.
- C. Allowances: Section 01020.
- D. Schedule of Values: Section 01370.
- E. Contract Close-out: Section 01700.

1.04 FORMS

- A. Application for each progress payment shall be prepared using the standard Fairfax County Public Schools Forms (copy enclosed), which include the following:
 - 1. Requisition Form
 - 2. Stored Material Log
 - 3. Change Order Log
 - 4. Certification Form

1.05 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

- A. Fill in required information, complete list of all component items of Work, fill in columns for all line items included in the Schedule of Values. Round all values off to the nearest dollar.
- B. Requisition Form: Describe each line item and list scheduled value, previous completed value, value of work for the current application, total value to date, and balance of uncompleted work. Calculate percentage of completion. Provide a total for all line items for each column.
- C. Stored Material Log: Describe all stored materials, listing previous value, received value for the application period, and installed value for the application period. List the total of these values (current value) for each item. Provide a total for all columns, less 10% retainage.
 - 1. The Contractor may bill for materials stored off the site with the following provisions:
 - a. Provide a copy of manufacturers invoice indicating nature of materials and amount of invoice.
 - b. Indicate location of materials stored.
 - c. Materials shall be marked to indicate that they are the property of Fairfax County Public Schools, and to indicate their destination.
 - d. Provide proof of sufficient insurance coverage to cover the value of the materials stored. The policy or certificate of insurance shall be in the name of Fairfax County Public Schools and must be submitted prior to the submission of the requisition. The Owner reserves the right to inspect the materials stored off the site prior to processing the requisition.
- D. Change Order Log: Identify and describe all Change Orders, Change Proposals and prepared Modification Requests. List total value, previous value, value for application period, total value to date, and balance of uncompleted work. Provide a total for all columns, less 5% retainage.
- E. Complete all items in item 1, "Analysis of Work Performed" on the certification form.
- F. Execute certification form with the signature of a duly authorized officer of the Contractor on all copies of the completed form.
- G. Submit 5 copies of the application for payment.

1.06 PROGRESS PAYMENTS

- A. The Owner will make a Progress Payment to the Contractor on the basis of a duly certified and approved estimate of the work performed during the preceding calendar month under this Contract, but to insure the proper performance of this contract, the Owner will retain five percent (5%) of the value of change orders and ten percent (10%) of the portion of the Contract Sum properly allocable to materials and equipment suitably stored at or off the site until final completion and acceptance of all work included in the Contract.

1.07 PREPARATION OF APPLICATION FOR FINAL PAYMENT

- A. Fill in Application Form as specified for progress payments.
- B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700: Contract Close-out.

1.08 SUBMITTAL PROCEDURE

- A. Submit Applications for Payment on a monthly basis or as stipulated in the Owner Contractor agreement.
- B. Submit for review and obtain certification signature of the School Board Inspector on all completed copies of the application. The Contractor shall provide supplementary information to facilitate review of application if requested.
- C. Upon review and certification by the School Board Inspector, submit all copies to the Architect. Upon review and certification by the architect, all copies shall be forwarded to the School Board representative.
- D. Upon review and certification by the School Board representative, the application shall be forwarded for payment.
- E. Upon rejection by any certifying party, the Contractor shall make corrections or adjustments required by the rejection and shall be required to obtain certification of the corrected application by all parties.

END OF SECTION

TO OWNER: PROJECT: _____

FROM CONTRACTOR: VIA ARCHITECT: _____

APPLICATION NO.: _____

PERIOD TO: _____

PROJECT NOS.: _____

CONTRACT DATE: _____

Distribution to:
 OWNER
 ARCHITECT
 CONTRACTOR

CONTRACT FOR: _____

CONTRACTOR'S APPLICATION FOR PAYMENT
 Application is made for payment, as shown below, in connection with the Contract. Continuation Sheet, AIA Document G703, is attached.

1. ORIGINAL CONTRACT SUM \$ _____

2. Net change by Change Orders \$ _____

3. CONTRACT SUM TO DATE (Line 1 + 2) \$ _____

4. TOTAL COMPLETED & STORED TO DATE \$ _____
 (Column G on G703)

5. RETAINAGE:
 a. _____% of Completed Work \$ _____
 (Columns D + E on G703)
 b. _____% of Stored Material \$ _____
 (Column F on G703)
 Total Retainage (Line 5a + 5b or Total in Column I of G703) \$ _____

6. TOTAL EARNED LESS RETAINAGE \$ _____
 (Line 4 less Line 5 Total)

7. LESS PREVIOUS CERTIFICATES FOR PAYMENT \$ _____
 (Line 6 from prior Certificate)

8. CURRENT PAYMENT DUE \$ _____

9. BALANCE TO FINISH, INCLUDING RETAINAGE \$ _____
 (Line 3 less Line 6)

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before me this _____ day of _____

Notary Public: _____

My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ _____
 (Attach explanation if amount certified differs from the amount applied for. Initial all figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT: _____

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner		
Total approved this Month		
TOTALS		
NET CHANGES by Change Order		

CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

PAGE OF PAGES

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT.

containing Contractor's signed Certification, is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.:

APPLICATION DATE:

PERIOD TO:

ARCHITECT'S PROJECT NO.:

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		E THIS PERIOD	F MATERIALS PRESENTLY STORED (NOT IN D OR E)	G TOTAL COMPLETED AND STORED TO DATE (D+E+F)	H BALANCE TO FINISH (C - G)	I RETAINAGE (IF VARIABLE) RATE
			FROM PREVIOUS APPLICATION (D + E)						
01	Mobilization								
02	Roofing Materials								
03	Roofing Labor								
04	Sheetmetal Materials								
05	Sheetmetal Labor								
06	Metal roofing Materials								
07	Metal roofing Labor								
08	Drain Replacement								
09	Vaccuming								
10	Payment and Performance Bonds								
11	Contingency								

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G703-1992

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CONTRACTOR LETTERHEAD

FAIRFAX COUNTY PUBLIC SCHOOLS REQUISITION

PROJECT:
DATE:
REQUISITION #

1. ANALYSIS OF WORK PERFORMED

Table with 4 columns: Item description (A-H), percentage sign, and blank lines for values.

2. CERTIFICATION OF CONTRACTOR

ACCORDING TO THE BEST OF MY KNOWLEDGE AND BELIEF, I CERTIFY THAT ALL ITEMS AND AMOUNTS SHOWN ON THE FACE OF THIS REQUISITION FOR PAYMENT ARE CORRECT; THAT ALL WORK HAS BEEN PERFORMED AND/OR MATERIAL SUPPLIED IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THE REFERENCED CONTRACT, AND/OR DULY AUTHORIZED DEVIATIONS, SUBSTITUTIONS, ALTERATIONS, AND/OR ADDITIONS; THAT THE FOREGOING IS A TRUE AND CORRECT STATEMENT OF THE CONTRACT ACCOUNT UP TO AND INCLUDING THE LAST DAY OF THE PERIOD COVERED BY THIS REQUISITION; THAT NO PART OF THE "BALANCE DUE THIS PAYMENT" HAS BEEN RECEIVED AND THAT I WILL MAKE TIMELY PAYMENT FROM THESE PROCEEDS TO MY SUBCONTRACTORS AND/OR SUPPLIERS IN ACCORDANCE WITH MY CONTRACTUAL ARRANGEMENTS WITH THEM.

BY CONTRACTOR SIGNATURE OF AUTHORIZED REPRESENTATIVE
19 TITLE

3. CERTIFICATION OF SCHOOL BOARD INSPECTOR

I CERTIFY THAT I HAVE CHECKED AND VERIFIED THE ABOVE AND FOREGOING REQUISITION FOR PAYMENT DURING MY REGULAR INSPECTION.

SCHOOL BOARD INSPECTOR DATE

4. CERTIFICATION OF ARCHITECT

I CERTIFY THAT I HAVE CHECKED AND VERIFIED THE ABOVE AND FOREGOING REQUISITION FOR PAYMENT; THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF IT IS A TRUE AND CORRECT STATEMENT OF WORK PERFORMED AND/OR MATERIAL SUPPLIED BY THE CONTRACTOR; THAT ALL WORK AND/OR MATERIAL INCLUDED IN THIS REQUISITION HAS BEEN INSPECTED BY ME AND/OR BY DULY AUTHORIZED REPRESENTATIVE OR ASSISTANTS AND THAT IT HAS BEEN PERFORMED AND/OR SUPPLIED IN FULL ACCORDANCE WITH REQUIREMENTS OF THE REFERENCED CONTRACT; AND THAT PAYMENT CLAIMED BY THE CONTRACTOR IS CORRECTLY COMPUTED ON THE BASIS OF WORK PERFORMED AND/OR MATERIAL SUPPLIED TO DATE.

SIGNED ARCHITECT DATE

5. PRE-PAYMENT CERTIFICATION BY FAIRFAX COUNTY SCHOOL BOARD

I CERTIFY THAT I HAVE CHECKED AND VERIFIED THIS REQUISITION AND THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT IS A TRUE AND CORRECT STATEMENT OF WORK PERFORMED AND/OR MATERIAL SUPPLIED BY THE CONTRACTOR; THAT ALL WORK INCLUDED IN THIS ESTIMATE HAS BEEN INSPECTED AND THAT IT HAS BEEN PERFORMED AND OR SUPPLIED IN FULL ACCORDANCE WITH REQUIREMENTS OF THE CONTRACT.

FAIRFAX COUNTY SCHOOL BOARD
SIGNED DATE

SECTION 01153
CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specifications Section, apply to this Section.

1.02 RELATED WORK

- A. General Conditions of the Contract: Section 00700.
- B. Section 01020: Contingency Allowance.
- C. Section 01152: Applications for Payment.
- D. Section 01370: Schedule of Values.
- E. Section 01630: Substitutions

1.03 WORK DESCRIPTION

- A. Promptly implement Change Order procedures:
 - 1. Provide full written data required to evaluate changes.
 - 2. Maintain detailed records for work done on a time-and-material/force account basis.
 - 3. Provide full documentation to Architect/Engineer on request.
- B. Contractor and Owner will designate in writing the person who is authorized to execute Change Orders.

1.04 DEFINITIONS

- A. Change Order: See Section 00700, General Conditions.
- B. Proposed Modification: See Section 00700, General Conditions.

1.05 PRELIMINARY PROCEDURES

- A. Owner or Architect/Engineer may initiate changes by submitting Proposed Modification to Contractor. Request will include:

1. Detailed description of the Change, Products, and location of the change in the Project.
 2. Supplementary or revised Drawings and Specifications.
 3. A specific period of time during which the requested price will be considered valid, which shall be 90 calendar days, unless otherwise stated.
 4. The specific action to be initiated by the Contractor.
 5. The amounts of the unit prices to be:
 - a. Those stated in the Agreement and the Proposal Form.
 - b. Those mutually agreed upon between Owner and Contractor.
- B. Contractor may initiate changes by submitting a written notice to Architect/Engineer, containing:
1. Description of the proposed changes.
 2. Statement of the reason for making the changes.
 3. Statement of the effect on the Contract Sum and the Contract Time.
 4. Statement of the effect on the work.
 5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.
 6. All claims by the Contractor arising out of or relating to the performance of the work or any termination hereunder shall be made in writing and shall be decided by the Director of the Office of Facilities Management or his designated representative. All claims must be filed with the Office of Facilities Management within five (5) calendar days after sustaining the injury underlying the claim. Failure to comply with this provision shall constitute an absolute waiver of such claim. The Director or the Office of Facilities Management or his designated representative shall issue his written decision within thirty (30) days of his receipt of the written claim which decision shall be final.

1.06 DOCUMENTATION OF PROPOSALS AND CLAIMS

- A. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow Owner and Architect/Engineer to evaluate the quotation.

1. Proposal costs attributable to labor shall be based upon labor rates for each category of personnel. A list of labor rates shall be submitted to the Owner for review and concurrence within 30 calendar days of the Notice to Proceed. See paragraph B2 below for allowable inclusions for establishment of labor rates.
- B. Provide data for lump sum proposals in accordance with the following criteria:
1. The Contractor's proposal shall be itemized and segregated by labor, equipment, and materials for the various components of the Change in the Work (no aggregate labor total will be acceptable) and shall be accompanied by signed proposals of any Subcontractors who shall perform any portion of the Change in the Work and of any entities who shall furnish materials or equipment for incorporation therein.
 2. The portion of the proposal relating to labor, whether by the Contractor's forces or the forces of any of its Subcontractors, shall include anticipated gross wages of Job Site labor, including foremen, who shall be directly involved in the Change in the Work (for such time as they will be so involved), plus payroll costs (including premium costs of overtime labor, if overtime is authorized, Social Security, Federal or State unemployment insurance taxes and fringe benefits required by collective bargaining agreements entered into by the Contractor or any such Subcontractor in connection with such labor).
 3. The portion of the proposal relating to materials may include the reasonable anticipated direct costs to the Contractor or to any of its Subcontractors of materials shall be purchased for incorporation in the Change in the Work, plus transportation and applicable sales or use taxes.
 4. The proposal may further include the Contractor's and any of his Subcontractor's reasonable anticipated equipment rental costs, except small hand tools, in connection with the Change in the Work. For rented equipment an hourly rental rate shall be used which shall be determined by using the monthly rental rates taken from the current edition of the Rental Rate Blue Book for construction Equipment and dividing it by 176. An allowance shall be made for operating costs for each and every hour the equipment is actually operating in accordance with the rates listed in the aforesaid Rental Book. The Contractor shall be allowed no more than 65% of the rental rate on Contractor owned equipment.
 5. Base Cost is defined as the total of labor, material, and equipment rentals as described in Subparagraphs 1.06B3 and 1.06B4. The actual net cost in money to the Owner for the Change in the Work shall be computed as follows:

- a. Contractor overhead and profit: If the Contractor performs the Change in the Work, his compensation shall be the Base Costs as described above, plus a mark-up of 20% on Base Costs less than or equal to \$10,000. If the Base Costs exceed \$10,000, his compensation shall be the Base Cost, plus a mark-up of 20% on Base Costs less than or equal to \$10,000, and a mark-up of 15% on Base Costs above \$10,000.
 - b. Subcontractor overhead and profit: If the work is performed by a Subcontractor, his compensation shall be the Base Costs as described above plus a mark-up as described in Paragraph 5.a. above for overhead and profit. The Contractor's compensation shall be a mark-up of ten percent (10%) of the Subcontractors Base Costs.
 - c. Sub-subcontractor overhead and profit: If the work is performed by a Sub-subcontractor, his compensation shall be the Base Costs as herein described plus a mark-up as described in paragraph 5.a. above for overhead and profit. The Subcontractors compensation shall be a mark-up of ten percent (10%) of the Sub-subcontractor's Base Costs for his overhead. The Contractor's compensation will be a mark-up of ten percent (10%) of the Sub-subcontractor Base Costs.
6. The mark-up on the cost of labor, materials, and equipment described in Paragraphs 5.a., 5.b., and 5.c. above shall compensate the Contractor, Subcontractor or Sub-subcontractor for all indirect costs associated with or relating to the Change in the Work including, but not limited to, labor and/or equipment inefficiency, acceleration, changes in sequence, delays, interference, impact on unchanged work, gross receipts tax, superintendent, small tools, reproduction, administration, insurance, unrelated safety requirements, temporary structures and offices, all other general and administrative, home office, and field office expenses.
- a. The mark-up on the cost of labor, materials, and equipment described in Paragraphs 5.b. and 5.c. above shall compensate the contractor or Subcontractor for all indirect costs associated with or relating to the change in the Work including but not limited to, gross receipt tax, superintendent, reproduction, administration, and insurance.
- C. Support each claim for additional costs, and for work done on a time-and-material basis, with documentation as required for a lump-sum proposal, plus additional information:
1. Name of the Owner's authorized agent who ordered the work, and date of the order. Include copies of written authorization when applicable.

2. Dates and times that work was performed, and by whom, verified and signed by Owner's Field Representative.
 3. Time record, summary of hours worked, and hourly rates paid.
 4. Receipts and invoices for:
 - a. Equipment used, listing dates and times of use.
 - b. Products used, including listing of quantities.
 - c. Subcontracts.
- D. Document requests for substitutions of Products as specified in Section 01600.

1.07 PREPARATION OF CHANGE ORDERS

- A. Architect/Owner will prepare each Change Order. Three copies shall be prepared, each with original signature.
- B. Form: Change Order - AIA Document G701.
- C. Change Order will describe changes in the work, both additions, deletions and any voided proposed modifications.
- D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.
- E. Upon completion of work under a Change Order, enter the pertinent changes in Record Documents.

1.08 CHANGE ORDER CONTENTS

- A. Contents of Change Orders will be based on, either:
 1. Architect/Engineer's proposed Modification and Contractor's responsive Proposal as mutually agreed between Owner and Contractor.
 2. Contractor's Proposal for a change as recommended by Architect/Engineer and as mutually agreed between Owner and Contractor.
- B. Owner and Architect/Engineer will sign and date the Change Order as authorization for the Contractor to proceed with the changes.
- C. Contractor will sign and date the Change Order to indicate agreement with the terms therein.

END OF SECTION

SECTION 01200
PROJECT MEETINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Pre-Bid Conferences: Instructions to Bidders.
- B. Summary of Work: Section 01010.
- C. Shop Drawings, Product Data and Samples: Section 01340.
- D. Operating and Maintenance Data: Section 01730.

1.03 DESCRIPTION OF WORK

- A. Architect/Owner will schedule and administer pre-construction meetings, periodic progress meetings and specially called meetings throughout the progress of the Work. Architect/Owner will:
 - 1. Preside at meetings.
 - 2. Record the minutes, including all significant proceedings and decisions.
 - 3. Reproduce and distribute copies of minutes after each meeting and furnish six (6) copies of minutes to Contractor.
- B. Representatives of Contractor, Subcontractors and suppliers attending the meeting shall be qualified and authorized to act on behalf of the entity each represents.
- C. Architect will attend meetings to ascertain that Work is being expedited consistent with Contract Documents and the construction schedules. Consulting Engineers will attend meetings when so directed by the Architect.

1.04 PRE-CONSTRUCTION MEETING

- A. Schedule immediately after date of Notice to Proceed.
- B. Location: A central site, convenient for all parties, as designated by the Owner.

- C. Attendance:
 - 1. Owner's Representative.
 - 2. Architect/Engineers.
 - 3. Contractor's Superintendent.
 - 4. Major Subcontractors.
 - 5. Major Suppliers.
 - 6. Others as appropriate as determined by the Architect and Contractor.
- D. Suggested Agenda (including, but not limited to the following):
 - 1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Projected Construction Schedules.
 - 2. Critical work sequencing:
 - a. Major equipment deliveries and priorities.
 - 3. Project Coordination.
 - a. Designation of responsible personnel.
 - 4. Procedures and processing of:
 - a. Field decisions.
 - b. Submittals.
 - c. Change Orders.
 - d. Applications for Payment.
 - 5. Adequacy of distribution of Contract Documents.
 - 6. Procedures for maintaining Record Information.
 - 7. Use of premises:
 - a. Office, work, and storage areas.

- b. Owner's requirements.
- 8. Construction facilities, controls and construction aids.
- 9. Temporary utilities.
- 10. Safety and first aid procedures.
- 11. Security procedures.

1.05 PROGRESS MEETINGS

- A. Schedule progress meetings every second week unless it is determined by Architect and Owner that additional meetings are necessary.
- B. Hold specially called meetings as required by progress of the work.
- C. Location of the meetings: The Project field office of the Contractor.
- D. Attendance:
 - 1. Architect and his professional consultants as needed.
 - 2. Subcontractors as appropriate. (Major and Active)
 - 3. Suppliers as appropriate. (Major and Active)
 - 4. Owner's Representatives
- E. Agenda of each progress meeting.
 - 1. Review and approval of minutes of previous meeting
 - 2. Safety Concerns
 - 3. School Coordination Issues
 - 4. Submittals
 - 5. Delivery Schedules
 - 6. Utility Coordination
 - 7. Field observations, problems, conflicts
 - 8. Outstanding RFI's, PM's, CO's
 - 9. Outstanding Punch Lists

10. Uncorrected Deficiencies
11. Status of DPWES, Fire Marshal, Health Inspections
12. Third Party Inspections and Certifications
13. Abatement Issues
14. Any other problems which might impact the schedule
15. Corrective measures and procedures to regain projected schedule
16. Two-week look-ahead
17. Maintenance of quality standards and controls
18. Site Cleanliness
19. Security Issues
20. Project Closeout related items
21. Other pertinent business

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 through Division 16 Specifications apply to this Section, with special attention to the following:
 - 1. Respective Sections of the Specifications requiring submittals: Consult Division 15 and 16 for any additional requirements.
 - 2. The Fairfax County Special Inspections Manual/"Special Inspections: Implementation in Fairfax County" (Edition in force at time of project permit). Review and approval of fabrication and erection submittals as required by the Special Inspections Program.
 - 3. Fairfax County Public Schools Agreement between Owner and Architect, Paragraph 1(D).5.j: The Architect shall make available to the Contractor compact disks containing the floor plan backgrounds, reflected ceiling plans and building sections. These electronic files shall be used for preparing submittals which require equipment locations and systems layouts.

1.02 DESCRIPTION OF WORK

- A. Submit shop drawings, product data and samples required by Contract Documents.

1.03 SHOP SUBMITTALS

- A. Identify details by reference to sheet and detail numbers shown on Contract Drawings.
- B. Sheet size minimum: 8 1/2" x 11"; maximum: 30" x 42". All sheets in one submittal shall be of uniform size.
- C. Drawings: Submit a minimum of four (4) sets of prints; one (1) set of prints shall be returned to the Contractor for reproduction and distribution. Electronic PDF submissions are acceptable for review only. Two (2) paper sets of approved prints shall be retained by the Owner. For submittals requiring special inspection review, provide additional sets as required by the special inspection manual.
- D. For submittals other than drawings, such as written specifications, maintenance instructions, calculations and catalog data which are capable of xerographic

duplicating, provide a minimum of five (5) copies. One (1) copy shall be returned to the Contractor for duplication and distribution. Two (2) copies shall be retained by the Owner.

1.04 PRODUCT DATA:

- A. Manufacturer's standard schematic drawings.
 - 1. Delete information not applicable to project.
 - 2. Provide additional information applicable to project.
- B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data:
 - 1. Mark each copy to identify pertinent materials, products or models.
 - 2. Indicate dimensions and clearances required.
 - 3. Indicate performance characteristics and capacities.
 - 4. Indicate wiring diagrams and controls.

1.05 SAMPLES

- A. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of product or material with integrally related parts and attachments devices.
 - 2. Full range of color samples.
- B. Field samples and mock-ups.
 - 1. Erect at project site at location acceptable to Architect.
 - 2. Construct each sample or mock-up complete.
- C. Provide a minimum of three (3) samples unless specified otherwise. Two (2) samples shall be retained by the Owner.

1.06 SUBMITTALS REQUIRING JURISDICTIONAL APPROVAL

- A. Certain categories of submittals are required to be reviewed and approved by appropriate jurisdictional authority prior to incorporating into the Work. Make such submittals first to the Architect for review, then submit to the approving authority.

- B. Structural Submittals; to each drawing affix the seal and signature of a Professional Engineer licensed in the State of Virginia, including, without limitation:
 - 1. Foundation piles and caissons, reinforced concrete framing systems, structural steel components and framing, steel roof trusses and girders, open-web steel joists, steel deck systems, steel stair railing and guardrail systems, steel ladders, cold-formed metal framing.

1.07 SUBMITTALS FOR CHPS APPROVAL

- 1. Provide documentation from the manufacturer that the products meet or exceed the requirements of CHPS.

1.08 CONTRACTOR RESPONSIBILITIES

- A. Review shop drawings, product data and samples prior to submission for conformance to contract requirements. Return non-conforming submittals to originator.
 - 1. Contractor shall stamp each submittal with a stamp bearing the following information:

Approved for Construction
 Approved as Noted
 Submittal Deviates from Contract Requirements

Contractor
 Date: _____
 Review by: _____
 Return by: _____
 Spec. Section: _____
 Submittal No.: _____

Indicate action taken of each submittal by checking appropriate box. If information on stamp is incomplete, submittal will be returned with no action taken.

- B. Verify:
 - 1. Floor Plan layouts provided by Architect on electronic media.
 - 2. Field measurements
 - 3. Field construction criteria
 - 4. Catalog numbers and similar data.

- C. Coordinate each submittal with requirements of work and of Contract Documents.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Architect's review of submittals.
- E. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect's review of submittals unless Architect gives written acceptance of specific deviations.
- F. At time of submission, note deviations in submittals from requirements of Contract Documents.
- G. Begin no work which requires submittals unless such submittals have been returned with Architect's stamp and initials or signatures indicating review.
- H. Distribute copies of submittals to parties concerned.

1.09 SUBMISSION REQUIREMENTS

- A. Schedule submissions for receipt by the architect from the date of Notice to Proceed (NTP) as follows:
 - 1. Finish materials and packaged or prefabricated equipment: Maximum of 45 calendar days from NTP.
 - 2. Designed systems (such as, but not limited to, casework, control systems, fire protection special systems window and curtain wall systems): Maximum of 90 calendar days from NTP.
 - 3. Liquidated damages: Liquidated damages shall be assessed for each consecutive calendar day beyond the maximum time periods indicated above. Refer to Section 01010, summary of work.
- B. Shop Drawings: Submit the required number of prints of each Drawing, including fabrication, erection, layout, and setting drawings until final acceptance is obtained.
- C. Product Data: Submit copies of manufacturer's descriptive data for materials, equipment and fixtures, including catalog sheets, showing dimensions, performance characteristics and capacities; wiring diagrams and controls; schedules; and other pertinent information as required. Indicate compliance with applicable referenced quality standards.
- D. Samples: Submit samples specified in product specification sections.
 - 1. Provide full range for color, texture or pattern selection.

2. Samples shall be marked, tagged, or otherwise identified with name of Contractor, name of project, purpose for which samples are submitted, and date, and be accompanied by letter of transmittal containing similar information, together with specification paragraph number for identification of each item.

E. Submittals shall include:

1. Date and revision dates.
2. Project title and number _____
3. The names of:
 - a. Architect
 - b. Contractor
 - c. Subcontractor
 - d. Supplier
 - e. Manufacturer
 - f. Separate detailer when pertinent.
4. Identification of product or material.
5. Relation to adjacent materials.
6. Field dimensions, clearly identified as such.
7. Specification section number.
8. Applicable standards, such as ASTM number or Federal Specification.
9. Space for Architect's stamp. (3" x 5" min.)
10. Identification of deviations from Contract Documents.

1.10 RESUBMISSION REQUIREMENTS

A. Shop Drawings

1. Revise drawings in accordance with review comments and resubmit as specified for initial submittal.
2. Indicate changes that have been made. Indicate resubmittal status by adding "R" after the original submittal number.

B. Project Data and Samples: Submit new data and samples as specified for initial submittal.

1.11 ARCHITECT'S DUTIES

- A. Review for:
 - 1. Design concept of project.
 - 2. Information given in Contract Documents.
 - 3. Review consultants' shop drawings for coordination with Contract Documents.
- B. Review of separate item does not constitute review of an assembly in which item functions.
- C. Affix stamp and initials or signature certifying to review of submittal.
- D. Return submittals to Contractor for reproduction and distribution.

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section, with special attention to the following:
 - 1. Allowances: Section 01020
 - 2. Application for Payment: Section 01152

1.02 DESCRIPTION OF WORK

- A. Submit to the Architect a Schedule of Values allocated to the various portions for the Work within ten days after award of Contract.
- B. Upon request of the Architect, support the values with data substantiating their correctness.
- C. The Schedule of Values, unless objected to by the Architect, shall be used only as the basis for the Contractor's Applications for Payment.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. The form for the Schedule of Values shall be the Fairfax County School Board's "Schedule of Amounts for Contract Payments" and will be obtained from the School Board's Office of Design and Construction. The form shall be completed in detail including quantities and unit costs.
- B. Identify Schedule with:
 - 1. Complete title of Project and location.
 - 2. Name of Architect and Architect's Commission Number.
 - 3. Name and address of Contractor.
 - 4. Date of Submission.
- C. Organize the Content of Schedule into columns with headings as follows:
 - 1. Item No. (Column No. 1).

2. Description of Item (Column No. 2).
 3. Quantity (Column No. 3).
 4. Unit of Measure (Column No. 4).
 5. Cost per unit (Column No. 5).
 6. Total cost of Item (Column No. 6).
- D. Column numbers above are identical to Requisition for Payment column numbers.
- E. Information in Schedule of Values shall be incorporated into proper and identical lines and columns of all Requisitions for Payment and shall serve as a basis for computing Progress Payments during construction.
- F. All line items shall be separated into all sub-values of major products and all information for all sub-values shall be as outlined above.
- G. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
- H. The sum of all values listed in the Schedule shall equal the total Contract Sum.

1.04 SUBMITTALS

- A. Submit six (6) copies for review by the Architect and Owner immediately after the Notice to Proceed. The Architect and Owner shall review and approve or require modifications of the submittal. If modifications are required, make corrections and resubmit.

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Additional Requirements of all parties to the Contract: General Conditions, Section 00700.
- B. Summary of Work: Section 01010.
- C. Supervision and Coordination: Section 01040.
- D. Shop Drawings, Product Data and Samples: Section 01340.

1.03 REFERENCE STANDARD

- A. ASTM E329-77 (1983) Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as used in construction.

1.04 QUALITY CONTROL

- A. The Owner, with the cooperation of the Contractor, shall maintain an adequate inspection system and perform such inspections and tests as will assure that the work performed under the Contract conforms to the Contract Documents and shall maintain and make available to the Architect adequate records of such inspections and tests.

1.05 DEFINITIONS

- A. Factory Tests: Tests made on various products and component parts prior to shipment to the job site, including but not limited to such items as transformer, boilers, air conditioning equipment, electrical equipment, and precast concrete.
- B. Field Tests: Tests or analysis made at, or in the vicinity of the job site in connection with the actual construction.
- C. Product: A type or category of manufactured goods, constructions and installations, or their associated services.

- D. Testing Laboratory: An individual or firm whose function includes testing, analyzing or inspecting "products."
- E. Certified Test Reports: Reports are reports of tests signed by a qualified professional attesting that tests were performed in accordance with the test method specified, that the test results reported are accurate, and that items tested either meet or fail to meet the stated minimum requirements. These test reports include those performed by Factory Mutual, Underwriters Laboratories, Inc., and others.
- F. Certified Inspection Reports: Those signed by approved inspectors attesting at the items inspected meet the specification requirements other than any exception included in the report.
- G. Manufacturer's Certificate of Conformance or Compliance: A certificate signed by an authorized manufacturer's official attesting that the material or equipment delivered meets the specifications requirements.

1.06 SUBMITTALS

- A. Submittals shall be prepared in accordance with the General Requirements and submitted to the Owner for approval. Each submittal shall be accompanied with a cover letter signed by the Lab. Each item proposed to be incorporated into the Contract shall be clearly marked and identified in the submittals and shall be cross-referenced to the Contract Drawings and Specifications so as to identify clearly the use for which it is intended.
- B. Submit the number required by the Contractor plus four (4) copies for the Architect.
- C. Certified Test Reports: Before delivery of materials and equipment, certified copies of the reports of all tests listed in the technical sections shall be submitted and approved. The testing shall have been performed in a laboratory meeting the requirements specified herein. Unless otherwise specified the tests shall have been performed within three years of submittal of the reports for approval. Test reports shall be accompanied by the certificate from the manufacturer certifying that the material and equipment proposed to be supplied is of the same type, quality, manufacturer, and make as that tested.
- D. Manufacturer's Certificates of Conformance or Compliance: Manufacturer's certification furnished by the Contractor on items of materials and equipment incorporated into the work will be accepted only when this method will assure full compliance with the provisions of the Contract, as determined by the Architect. Pre-printed certifications will not be acceptable. All certifications shall be in the original. The original of all manufacturer's certifications shall name the appropriate item of equipment or material, specification, standard, or other document specified as controlling the quality of that item and shall have attached thereto certified copies of test data upon which the certifications are based. All

certificates shall be signed by the manufacturer's official authorized to sign certificates of conformance or compliance.

- E. **Laboratory Reports:** Reports shall cite the contract requirements, the test or analysis procedures used, the actual test results, and include a statement that the item tested or analyzed conforms or fails to conform to the specification requirements. All test reports shall be signed by a representative of the testing laboratory authorized to sign certified test reports.

1.07 QUALITY CONTROL REQUIREMENTS

- A. **The Testing Laboratory shall inspect and test all work under the contract and maintain records of the inspections and tests. Approvals, except those required for field installations, field applications, and field tests, shall be obtained before delivery of materials and equipment to the project site.**
- B. **Factory Tests:** Unless otherwise specified, the Contractor will arrange for factory tests when they are required under the Contract.
- C. **Factory Inspection:** Unless otherwise specified, the Contractor will arrange for factory inspection when required under the Contract.
- D. **Field Inspections and Tests by the Owner:** The Owner will provide and pay for all equipment, instruments, qualified personnel, and facilities necessary to inspect all work and perform all tests required by the Contract.
- E. **Approval of Testing Laboratories:** All laboratory work under this Contract shall be performed by a laboratory approved by the Owner. The basis of approval includes the following:
 - 1. Testing laboratories performing work not in connection with concrete, steel or bituminous materials shall comply with Sections 3 and 4 of ASTM E329.
- F. **Repeated Tests and Inspections:** The Owner will repeat tests and inspections after each correction made to non-conforming materials and workmanship until tests and inspections indicate that the materials, equipment, and workmanship conform to the Contract requirements. The retesting and reinspection shall be performed by the testing lab. The Contractor shall pay for any retesting and reinspection.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Summary of Work: Section 01010.

1.02 DESCRIPTION OF WORK

- A. Furnish, install and maintain temporary utilities required for construction. Remove temporary utilities upon completion of work.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code.
- B. Comply with Federal, State and Local Codes and Regulations and with utility company requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials may be new or used but shall be adequate in capacity for the required usage, shall not create unsafe conditions, and shall not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING (ADDITIONS and ALTERATIONS)

- A. Make connections to existing service facilities in compliance with governing code, laws, and regulations.
- B. Owner will be responsible for paying power charges.
- C. Install circuit and branch wiring, with area distribution boxes located so that power and lighting is available throughout the construction by the use of construction type power cords.
- D. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

- E. Provide adequate power and artificial light to field offices for Contractor and owner's Representative.

2.03 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat and ventilation as needed to maintain adequate environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation of materials and to protect materials and finishes from damage due to temperature or humidity.
- B. Provide adequate forced ventilation of enclosed areas where curing of installed materials occurs, in order to disperse humidity and noxious odors and to prevent hazardous accumulations of dust, fumes, vapors or gases.
- C. Portable heaters shall be standard UL approved units complete with controls.
- D. Provide adequate heat and cooling to field offices of Contractor and Owner's Representative.
- E. Pay all costs of installation, maintenance, operation and removal and for fuel consumed.
- F. No extension of time shall be allowed due to Contractor's failure to provide temporary heat.

2.04 TEMPORARY TELEPHONE SERVICE

- A. Arrange with local telephone service company, provide direct line telephone service at the construction site for the use of personnel and employees. Service required shall be as follows:
 - 1. One direct line instrument in Field Office, and one dedicated line for fax machine.
 - 2. One direct line instrument for the Owner's Representative, and one dedicated line for fax machine.
 - 3. Other instruments at the option of the Contractor, or as required by regulations.
 - 4. Pay all costs for installation, maintenance and removal, and service charges for local calls. Toll charges shall be paid by the party who placed the call.

2.05 TEMPORARY WATER

- A. Provide temporary water required for construction process (new work);

Or, make connections to existing facilities, provide water for construction purposes (additions & renewal work).

- B. Owner will pay costs of water used.

2.06 TEMPORARY SANITARY FACILITIES

- A. Provide sanitary facilities in compliance with laws and regulations. See section 01010, Contractor Use of Premises.
- B. Service, clean and maintain facilities and enclosures.
- C. Provide one separate sanitary facility for the sole use of the Owners Representative, throughout the construction period.
- D. Use of school facilities by contractor's personnel is prohibited.

PART 3 - EXECUTION

3.01 GENERAL

- A. Comply with applicable requirements in Division 15 - Mechanical, and in Division 16 - Electrical.
- B. Maintain and operate systems to assure continuous service.
- C. Modify and extend systems as work progress requires.

3.02 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore existing facilities used for temporary service to specified or original condition, fully operational.

END OF SECTION

SECTION 01520
CONSTRUCTION AIDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Section 01010 "Summary of Work" (Safety precautions)
 - 2. Section 01530 "Barriers".

1.02 DESCRIPTION OF WORK

- A. Furnish, install and maintain required construction aids; remove upon completion of work.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with Federal, State and local codes and regulations.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials may be new or used, suitable for the intended purpose, but shall not violate requirements of applicable codes and standards.

2.02 CONSTRUCTION AIDS

- A. Provide construction aids and equipment as required by personnel and to facilitate the execution of the work; including scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other such facilities and equipment.
- B. Refer to respective sections for particular requirements for each trade.
- C. Maintain all facilities and equipment in a first-class condition.

2.03 TEMPORARY ENCLOSURES

- A. Provide temporary enclosures to separate work areas from the areas of existing building occupied by Owner; to prevent penetration of dust, fumes, or moisture into occupied areas, to prevent damage to existing equipment, to protect Owner's occupants and operations from construction work, and to prevent entry of

unauthorized persons. Doors in the construction barrier between the additions / renovated areas shall be self-closing.

- B. Provide temporary exterior and interior doors and frames with self-closing hardware and padlocks. Springs utilized as door closers shall not be permitted. Doors shall be solid core wood or hollow metal, and weather stripped. Provide temporary walk-off mats at each passable entrance between occupied and construction areas in order to minimize dust migration. Mats shall be carpet with non-skid backing. Mats shall be rotated and professionally cleaned on a regular basis, in a manner sufficient to maintain visual cleanliness and mitigate airborne dust in occupied spaces. Mats should be dissimilar to the school's own floor mats, in order to minimize confusion for custodial staff.
- C. Where work is phased, enclosures shall be removable as necessary for work being done in each phase. Other enclosures shall be removable as necessary for performance of work and handling of material.
- D. Enclosures shall be 3 5/8", 20-gauge minimum metal stud frames with 5/8" gypsum wallboard to meet two-hour rated construction. Frames shall extend from floor to underside of metal deck and shall completely seal off all necessary areas. On exterior enclosures, substitute 1/2" CDX plywood. Tape or otherwise seal panel joints in gypsum board and plywood. Where exterior enclosures form temporary means of egress, provide 1/2" gypsum sheathing. Insulate exterior enclosures with batt type insulation complying with the requirement of Section 07210, 2.01A.
 - 1. For temporary enclosures or exitways adjacent to work that is occurring overhead, provide structural roof construction that is adequate to protect building occupants using the enclosures or exitways.
 - 2. Secure sole plates of temporary enclosures to existing floors with construction adhesive.
- E. Exterior enclosures: Provide 6 feet high temporary chain link construction fencing to enclose construction work areas, material storage areas, and access ways. Fences shall be added or modified to enclose active work and storage areas as the project progresses. All chain link mesh panels shall be secured with clamps, wire ties shall not be permitted. Mesh shall be knuckled at the top and bottom, securely fastened to panel frames and shall be monitored for protruding wires. Barbed wire shall not be permitted.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Consult with Architect, review site conditions and factors which affect construction procedures and construction aids, including adjacent properties and public facilities which may be affected by the execution of the Work.

3.02 GENERAL

- A. 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.

3.03 REMOVAL

- A. Completely remove temporary materials, equipment and services:
 - 1. When construction needs can be met by use of permanent construction.
 - 2. At completion of the Project.
- B. Clean, and repair damage caused by installation or by use of temporary facilities.
- C. Grade areas of the site affected by temporary installations to required elevations and slopes and clean the area.
- D. Restore existing and permanent facilities used for temporary purposes to specified or to original condition.

END OF SECTION

SECTION 01530

BARRIERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section with special attention to the following:
 - 1. Summary of Work: Section 01010.
 - 2. Construction Aids, Enclosures: Section 01520.

1.02 DESCRIPTION OF WORK

- A. Furnish, install and maintain suitable barriers to prevent public entry, and to protect the Work, existing facilities, trees and plants from construction operations; remove when no longer needed or at completion of Work.
- B. Maintenance of Means of Egress
 - 1. The Contractor shall keep open and maintain all existing and temporary fire exits in the existing school during the course of construction.
 - 2. Provide alternate fire exits if necessary including barriers and signs as may be required by local fire official.
 - 3. Contractor shall coordinate and arrange with local fire officials to implement a plan for temporary exiting of existing school building should alternate fire exits be required.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with Federal, State, and local codes and regulations.

PART 2 - PRODUCTS

2.01 BARRIERS

- A. Materials shall be determined at Contractor's option, of type, size and quantity as appropriate to serve the required purpose.

PART 3 - EXECUTION**3.01 TREE AND SHRUB PROTECTION**

- A. The Contractor shall preserve and protect all existing trees and shrubs on or adjacent to the site which have not been designated for removal or relocation. The Contractor shall be responsible for all unauthorized cutting or damaging of trees and shrubs, including damage due to careless operation of equipment materials stockpiles shall not be permitted within branch spread. All trees susceptible to possible damage by equipment shall be boxed with boards and wire to protect the trunk. Barricades shall be erected to prevent operation of heavy equipment within the drip lines of trees to remain.
- B. Interfering branches shall be removed without injury to the trunks. Care shall be taken by the Contractor in felling trees authorized for removal to avoid any unnecessary damage to trees and shrubs that are to remain in place. Any branches of trees broken during such operations shall be trimmed in accordance with recommended practice. The Contractor shall replace or restore at his own expense all trees and shrubs not protected as required herein that may be destroyed or damaged by construction operations.

3.02 REMOVAL

- A. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed and when approved by the Architect.
- B. Clean and repair damage caused by installation. Fill and grade the areas of the site to required elevations and slopes and clean the area.

END OF SECTION

SECTION 01560
TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Construction Aids: Section 01520.
 - 2. Barriers: Section 01530.
 - 3. Cleaning: Section 01710.

1.02 RELATED WORK

- A. Related requirements specified in Division 2: Site Work.

1.03 DESCRIPTION OF WORK

- A. Contractor shall provide and pay for all controls required by Fairfax County Regulations for noise, dust, water, pest and rodent, debris, pollution, traffic and erosion whether indicated in the Contract Documents or not.
- B. All site controls and features shall be constructed and maintained in accordance with the latest edition of the Fairfax County Public Facilities Manual.

1.04 OTHER REGULATIONS

- A. All regulations of the Fairfax County Department of Public Works and Environmental Services.

1.05 OPEN BURNING

- A. Not Permitted

1.06 EROSION CONTROL

- A. The Contractor shall perform the work in such a manner as to prevent the washing of any soil, silt, or debris onto adjacent properties, and shall be held responsible for any damage incurred for a period of one year after date of acceptance of the completed work. This includes construction of berms, siltation pond, collars on structures, etc., or any other device that might aid as a deterrent to erosion.

- B. The Contractor shall construct a siltation trap in natural ground at the base of all perimeter fill slopes. The siltation trap shall be 2 feet deep, 2 feet wide at the bottom with 2:1 side slopes. All excavated material shall be placed on the downhill side of the construction to act as a berm. Minimum one-foot top berms shall be maintained at all times during the construction of perimeter fills.
- C. The Contractor agrees to hold the School Board or any of its agents harmless from any and all liability or damage that may arise out of a violation of the Siltation Ordinance and agrees to indemnify them against any loss.
- D. If at any time during the construction of this property silt goes offsite and if, when this occurs, the site plan and specifications for siltation and erosion control as approved by Fairfax County are not being complied with, then the Contractor shall pay to the Owner the sum of \$5,000 as liquidated damages.
- E. This provision for liquidated damages shall be a continuing one and for each and every occurrence there shall be paid to the Owner the sum of \$5,000 as liquidated damages.

1.07 INSPECTION AND APPROVAL

- A. The County School Board of Fairfax County, Virginia, shall provide an inspector to represent it in the inspections of the work. The presence of this inspector shall in no way be construed by the Contractor as approval of methods or materials that do not conform to the requirements of this Contract.

1.08 TRAFFIC CONTROL

- A. The Contractor shall maintain, at his expense, all boundary, adjacent and/or access roads, regardless of status, classification, or ownership, which he or his subcontractor uses, under permit or otherwise during the course of construction of this project. Maintenance shall be performed as needed to keep the road passable at all times, so as to guarantee that other users of the road can travel thereon with a minimum of inconvenience and interruption of normal routine.
- B. Contractor shall, at his expense, provide and maintain all traffic control devices, signals, barriers, flares, lights, flagmen, etc. required by law when his operations conflict with the movement of traffic, both vehicular and pedestrian, on dedicated streets and highways.

1.09 PERMITS AND FEES

- A. Contractor shall obtain and pay for all permits and fees required for the performance of this Work.

END OF SECTION

SECTION 01630

SUBSTITUTIONS AND PRODUCT OPTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 CONTRACTOR'S OPTIONS

- A. For products specified only by referenced performance standards, select a product and manufacturer meeting all the required standards. After award of contract, evidence of conformance shall be submitted in accordance with Section 01340, Shop Drawings, Product Data and Samples.
- B. For products specified by naming a list of several products and manufacturers, select any product and manufacturer named on the list. Contractor may propose a directly comparable substitution to the specified items in accordance with the requirements of this section.
- C. Products specified by naming one product and manufacturer shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition. Contractor may propose a directly comparable substitution to the specified item in accordance with the requirements of this Section.
- D. For products specified by naming one product and manufacturer followed by the phrase "No Substitution", there shall be no option. The contractor shall not be allowed to propose a substitution to the specified item.

1.03 SUBSTITUTIONS

- A. Ten (10) days prior to receipt of bids, Architect will consider formal requests from Contractor for substitution of products; requests received less than 10 days prior to bid due date shall not be considered.
- B. Submit 4 copies of request for substitution. Include:
 - 1. Complete data substantiating compliance of proposed substitution with Contract Documents.
 - 2. For Products:
 - a. Product identification, manufacturer's name and address.

- b. Manufacturer's literature indicating product description, performance and test data, reference standards and range of manufacturers colors if item requires color selection.
 - c. Samples.
 - d. Name and address of similar projects on which product was used, dates of installation, responsible contacts, and telephone numbers.
 - 3. Detailed description of proposed construction methods with drawing illustrating methods.
 - 4. Itemized comparison of proposed substitution with product(s) or method(s) specified.
 - 5. Data relating to changes in construction schedule.
 - 6. Relation to separate contracts (if applicable).
- C. Request for substitution represents that:
 - 1. Contractor has personally investigated proposed product or method and determined that it is equal or superior in all respects to that specified.
 - 2. Contractor will provide the same guarantee for substitution as for product or method specified.
 - 3. Contractor will coordinate installation of accepted substitution into work, making such changes as may be required for work to be complete.
 - 4. Contractor waives all claims for additional costs related to substitution that may arise subsequent to approval.
- D. Substitutions shall not be considered if:
 - 1. Subsequent to award of contract, such items are indicated or implied on shop drawings or project data submittals, without formal substitution request submitted as specified in this Section.
 - 2. Acceptance will require substantial revision of Contract Documents.
 - 3. Acceptance will require additional contract time and will adversely affect construction schedule.
- E. Substitutions will be considered after the deadline only under the following conditions:

1. The specified product is no longer manufactured.
2. The specified product is not available due to a strike or catastrophic occurrence.

PART 2 - PRODUCTS

2.01 NOT APPLICABLE

PART 3 - EXECUTION

3.01 NOT APPLICABLE

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Section 01010 - Summary of Work.

1.02 CLOSEOUT PROCEDURES

- A. Comply with procedures stated in General Conditions of the Contract for issuance of Certificate of Substantial Completion.
- B. Owner will occupy designated portion of Project for the purpose of installation of equipment, conduct of business, under provision stated in Certificate of Substantial Completion.
- C. When Contractor considers Work has reached final completion, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's inspection.
- D. In addition to submittals required by conditions of Contract, provide submittals required by governing authorities, and submit final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.
- E. Owner's Representative will issue final change order reflecting approved adjustments to Contract Sum not previously made by Change Order.
- F. Ceiling Concealment Inspection.
 - 1. General: Prior to installation of ceiling panels, an inspection shall be conducted to ascertain the quality and degree of completion of all work above the finished ceiling and to record any discrepancies in the Contract Documents. The inspection shall be conducted by the Owner's Representative and the Contractor and recorded on forms provided by the Owner's Representative.
 - 2. Ceiling Suspension System: Grilles, registers, diffusers, light fixtures, and cut panels around fixtures may be installed prior to the inspection, however, ceiling panels shall not be laid in place until after the inspection and all discrepancies have been corrected.

- G. Wall Close-in Inspection: Prior to wall close-in, an inspection shall be conducted to ascertain the quality and degree of completion of all work concealed within walls and record any discrepancies in the Contract Documents. The inspection shall be conducted by the Owner's Representative, Architect, and the Contractor and recorded by the Contractor on forms provided by the Owner's Representative.
- H. Copies of the Inspection Reports: Reports shall be prepared by the Contractor with copies to the Owner's Representative, Architect, and the Consulting Engineers. The inspection report shall be annotated as each discrepancy is corrected and any discrepancy remaining at the time of the Final Inspection shall be included on the punch list.
- I. Substantial Completion: See Section 00700, General Conditions, paragraph 12.04.
- J. Final Inspection: See Section 00700, General Conditions, paragraph 12.05.

1.03 SYSTEMS DEMONSTRATION

- A. Prior to final inspection, demonstrate operation of each system to Owner's Representative.
- B. Instruct Owner's designated operating and maintenance personnel in operation, adjustment, and maintenance of materials, products, equipment and systems, using the operation and maintenance data as the basis of instruction.

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Summary of Work: Section 01010.

1.02 RELATED WORK

- A. Each Specification Section: Cleaning for specific equipment, products, or elements of the work.

1.03 WORK DESCRIPTION

- A. Execute cleaning, during the course of the Work, and at completion of the Work, as required by General Conditions, and as described in Part 3 of this Section.
- B. Nothing in this Section or elsewhere in the Contract Documents shall be construed as relieving the Subcontractors of their individual responsibility to perform periodic clean up of their portion of the Work. Subcontractors shall cooperate with the Contractor to assist in both periodic and final clean up. The Contractor shall enforce this requirement and shall notify each subcontractor of his responsibility for any damage caused by his operations during such cleanups.
- C. If the Contractor fails to clean up, the Owner may do so and the cost thereof shall be deducted from the Contract Sum.

1.04 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials that will not create hazards to health or property, and which will not damage surfaces.

- B. Use only those cleaning materials and methods recommended by manufacturer of the surface.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 CLEANING DURING CONSTRUCTION

- A. Execute daily cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish. Remove containers from the site at project completion.
- C. Remove waste materials, debris and rubbish from the site as necessary and dispose of at legal disposal areas away from the site.
- D. Where work is performed adjacent to occupied areas, contractor shall utilize HEPA vacuums to minimize and control dust levels. Use of other types of vacuums shall not be acceptable.
- E. During the course of construction, the building and premises shall present a neat, orderly and workmanlike appearance.

3.02 DUST CONTROL

- A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-need basis until painting is finished.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly coated surfaces.

3.03 FINAL CLEANING

- A. Employ skilled workmen for final cleaning.
- B. Besides the general broom cleaning and refuse removal, the Contractor shall do the following special cleaning for all trades before the final completion and acceptance of the work.
 - 1. Remove putty stains, soil and paint from all glass and wash and polish same.
 - 2. Clean and polish all finishing hardware.

3. Remove all spots, soil and paint from all ceramic tile work, glazing and mirrors.
 4. Clean all plumbing fixtures, accessories and equipment, including all mechanical equipment.
 5. Clean all tile, terrazzo, wood, and other finished floors.
 6. Clean and vacuum all carpet.
 7. Clean premises of all debris and dirt.
 8. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.
 9. Polish glossy surfaces to a clear shine.
 10. Clean window frames, entrance frames, hollow metal work and all ornamental iron work.
- C. Ventilating Systems:
1. Clean permanent filters and replace disposable filters if units were operated during construction.
 2. Clean ducts, blower, and coils if units were operated without filters during construction.
- D. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- E. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire Work is clean.

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Bid Proposal Bonds: Instructions to Bidders.
 - 2. Performance Bond and Labor and Material Payment Bond: Sections 00302 and 00303.
 - 3. General Warranty of Construction: General Conditions, Section 00700 (16.02).
 - 4. Contract Close-out: Section 01700.

1.02 DESCRIPTION OF WORK

- A. Compile specified Warranties and Bonds.
- B. Co-execute submittals when so specified.
- C. Review submittals to verify compliance with Contract Documents.
- D. Assemble and format, include in Record and Information Booklets and submit to Architect for review and transmittal to Owner.

1.03 SUBMITTAL REQUIREMENTS

- A. Assemble warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers and subcontractors.
- B. Number of original signed copies required: See Section 01730, submittal procedures.
- C. Product or work item: List each firm or manufacturer, with name of Principal or representative, address and telephone number.
 - 1. Product Identification: Provide serial and/or model numbers for specific identification of equipment.

- D. Indicate date of beginning of warranty, bond or service and maintenance contract.
- E. Specify duration of warranty, bond, or service maintenance contract.
- F. Provide information for Owner's personnel:
 - 1. Proper procedure in case of failure.
 - 2. Instances which might affect the validity of warranty or bond.
- G. Contractor, name of responsible principal, address, and telephone number.

1.04 FORM OF SUBMITTALS

- A. Format:
 - 1. Size 8 1/2" x 11", punch sheets for 3 ring binder.
 - 2. Fold larger sheets to fit into binders.

1.05 EFFECTIVE DATE AND DURATION OF WARRANTIES AND BONDS

- A. The Contractor shall provide and maintain warranties on all completed work performed under this Contract for a period of one (1) year, unless noted otherwise in the individual specification section. The start of the Warranty Period for all completed work shall commence on the date of legal occupancy by the Owner for each separate phase.
- B. All materials, products, equipment, etc. provided under this contract shall carry the manufacturer's standard warranties. Where standard equipment through the manufacturer exceed the periods listed in these specifications, the manufacturer's warranty shall take precedence. **No additional cost extended warranties or service agreements are required under this contract.**

1.06 SUBMITTALS REQUIRED

- A. Submit warranties, bonds, and service and maintenance contracts as specified in the respective sections of Specifications, and as specified by this Section.

END OF SECTION

SECTION 02070

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and Division 1 Specifications Sections, apply to the Work of this Section, with special attention to the following:
 - 1. Summary of Work: Section 01010
 - 2. Temporary Utilities: Section 01510
 - 3. Construction Aids: Section 01520 (Temporary Enclosures)
 - 4. Barriers: Section 01530

1.02 RELATED WORK: NOT APPLICABLE

1.03 REFERENCE STANDARDS

- A. Occupational Safety and Health Standards for the Construction Industry (29 CFR Part 1926) as promulgated by OSHA.
 - 1. Subpart D – Occupational Health and Environmental Controls, 1926.62-Lead.
 - 2. Subpart T – Demolition.
- B. Virginia Erosion and Sediment Control Handbook
- C. Fairfax County Public Facility Manual

1.04 WORK EXCLUDED

- A. Information related to asbestos abatement/removal and materials and finishes containing asbestos is indicated on the Drawings, and in the school's, Asbestos Containing Materials (ACM) Management Plan, available on site and included at the end of this section. Removal of asbestos containing materials shall be performed by a licensed asbestos abatement/removal contractor retained by the Owner, except as noted in 1.06 below
- B. It shall be the responsibility of the Contractor to notify the Owner prior to initiating selective demolition in existing building areas where the presence of asbestos

has been identified. Selective demolition shall not commence until asbestos-containing material has been removed.

- C. The Contractor shall include a time allowance for notification and abatement/removal operations for identified ACM in his work schedule.
 - 1. A minimum 20-day notification to the EPA and the Virginia State Department of Labor and Industry is required where removal and disturbance of more than 10 LF per 10 SF of ACM is required.

1.05 CONTRACTOR QUALIFICATIONS

- A. The Contractor shall have personnel on site during performance of selective demolition who are trained to identify ACM and other hazardous material, and who are familiar with removal procedures for non asbestos containing hazardous materials (See 1.06 below). The Contractor shall provide evidence of certification for these personnel.
- B. For removal of existing elevator, the contractor shall use subcontractors licensed for such work. The subcontractor shall obtain a permit for the work and have the work inspected after demolition is complete.

1.06 DESCRIPTION OF WORK

- A. General:
 - 1. The contractor shall remove and legally dispose of all equipment and materials indicated on the drawings, including those items that contain regulated hazardous materials, including asbestos containing materials (ACM) as noted below. Regulated hazardous materials shall require specialized disposal in accordance with applicable regulations. The Contractor will coordinate the scheduling of the removal of all hazardous materials with the Owner and provide the Owner with documentation that the hazardous waste is disposed at an authorized waste disposal facility.
 - a. Regulated hazardous materials include the following:
 - 1) Fluorescent lamps and PCB containing ballasts.
 - 2) Lead paint, glazed surfaces, putty and sealants in windows/frames.
 - a) Remove primer from existing steel prior to making modifications required by the structural drawings. Where modifications run along the structural steel completely, remove primer from area or work. Where modifications intersects at 90 degrees+/-,

remove primer 1 foot each side of the connection for a minimum of 2 feet total.

- 3) Metal primer on structural steel and steel windows.
 - 4) CFC type refrigerants such as R-12 ("Freon").
 - 5) ACM putty and caulk at steel windows. The Contractor must coordinate removal activities to allow the Owner to schedule the presence of a project monitor. Provide the Owner with documentation that the ACM waste generated is disposed at an authorized waste disposal facility.
 - 6) Wood utility poles treated with creosote.
2. Lead-containing painted and glazed surfaces that contain detectable concentrations of lead, including concentrations less than the definition of LBP, must be handled in accordance with the OSHA Lead in Construction Standard. Contractors performing work that could impact paint films or glazing that have detectable concentrations of lead should be informed of the testing results and should take appropriate actions to comply with the OSHA Lead in Construction Standard. Appropriate actions would include but not limited to performing air monitoring to measure worker exposure; assuring that the workers are provided with adequate respiratory protection; and assuring that workers are provided with appropriate training.
 3. Workers performing demolition of LCSC (lead-containing surface coatings) must have, at a minimum, two-hour lead awareness training in accordance with OSHA Standard 29 CFR Part 1926.62. If LCSC are required to be stripped or removed from the building component substrate, then additional training would be required based upon the measured lead concentration of the surface coating and the airborne lead concentrations measured or anticipated to be generated during each work activity.
 4. The disposal of waste generated during any restoration, renovation, or demolition operations, including items coated with lead paint, is regulated by EPA Standard 40 CFR Part 261, Subpart C.

B. Performance of Work

1. Construction of the proposed work will be performed while school is in use. The Contractor shall give full cooperation to the school administration and staff in scheduling and performing the work.

2. The Contractor shall provide, install and maintain safety and dust barriers as required by applicable health and safety regulations and as specified in Section 01520.
 3. The Contractor shall schedule his work and deliveries so as not to interfere with the normal operation of the school, including morning arrivals and afternoon departures.
 4. The Contractor shall give seventy-two hours advance written notice to Owner when work is to be performed that might endanger and inconvenience occupants.
 5. The Contractor shall provide all erosion and sediment control devices as required by site inspector, owner, owner's agent, architect or engineer.
 6. The Contractor shall keep open, protect and maintain all existing fire exits and fire lanes during the entire course of construction.
- C. Protection
1. Erect barriers, fences, guard rails, enclosures, chutes, and shoring to protect personnel, structures, and utilities remaining intact.
- D. Maintaining Traffic
1. Minimize interference with normal use of roads, streets, driveways, sidewalks, and adjacent facilities.
 2. Do not close or obstruct streets, sidewalks, alleys, or passageways without written permission from authorities having jurisdiction.
 3. If required by governing authorities, provide alternate routes around closed or obstructed traffic ways.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION**3.01 INSPECTION**

- A. Verify that areas to be demolished are unoccupied and discontinued in use.

- B. Verify that all utilities within the area to be demolished have been cut off and capped.
- C. Do not commence work until conditions are acceptable to Architect and Owner.

3.02 PREPARATION

- A. Remove items scheduled to be salvaged for Owner, and place in designated storage area. (See 3.05, Salvage).

3.03 DEMOLITION

- A. Demolition shall be carried out with care so that portions of building that are to remain will be undamaged. Work on exterior of building shall be done with extreme care to prevent risk or harm to persons or property. Install temporary floors consisting of sisal kraft paper over existing floors that are to remain in areas of work. Do not allow debris to accumulate.
- B. Coordinate demolition with work of other trades. Supervise and assist in removal and replacement of existing materials for installation of new mechanical and electrical items. Remove and replace or re-route mechanical, electrical installation as indicated on the drawings and specified or required for installation of new work or remodeling.
- C. Walls
 - 1. At areas where windows are removed, protect adjacent work which shall remain.
 - 2. Where openings are cut in walls, such openings shall be cut with care to avoid damage to work that shall remain.
 - 3. Infill masonry shall be toothed, with the exception of face brick which shall be flush vertically with adjoining existing work.
 - 4. New work shall be carefully installed with materials that match existing and shall conform to existing planes unless indicated otherwise.
- D. Finishes
 - 1. Existing ceiling, wall and floor finish or trim that is disturbed or destroyed by these operations shall be replaced to abut adjoining walls, floors, ceiling and new construction with material to match existing.
 - 2. At locations where existing tile floors are disturbed by new construction, existing tile shall be removed to nearest tile joint that parallels new construction and shall be replaced.

- E. Connecting work and new work in extension of existing work shall correspond in all respects with that to which it connects, or similar existing work, unless otherwise indicated or specified. Existing work shall be cut, drilled, altered or temporarily removed and replaced as necessary for performance of Contract.
- F. No structural member shall be cut or altered without written authorization of Architect.
- G. Work remaining in place that is damaged or defaced by work under this contract shall be restored to the original condition at the time of award of contract.
- H. If removal of existing work exposes discolored, unfinished surfaces or work out of alignment, such surfaces shall be refinished or material replaced as necessary to make contiguous work uniform and harmonious.

3.04 DISPOSAL

- A. Remove demolition debris daily.
- B. Do not store or burn materials on site.
- C. Transport demolition debris to off-site legal disposal facilities.
 - 1. Hazardous materials such as fluorescent lamps and PCB-containing ballasts shall be disposed of at special collection centers offering specialized recycling and treatment procedures.

3.05 SALVAGE

- A. Owner assumes no responsibility for loss or damage to materials or structures on site, salvage value of which Contractor may have reflected in his bid.
- B. Right of first refusal: All existing items of construction, building materials and furnishings (doors, frames, hardware, windows, chalkboards, tackboards, kitchen, heating ventilation, air conditioning, plumbing and electrical equipment, etc.) located in renovated or altered areas of the project shall be carefully removed without damage and remain the property of the Owner unless indicated for re-use in the new work. Any equipment not desired to be retained by the Owner shall be removed from the site and legally disposed of by the Contractor.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specifications Sections, apply to the Work of this Section.

1.02 RELATED WORK: NOT APPLICABLE.

1.03 REFERENCE STANDARDS

- A. 2012 Virginia Uniform Statewide Building Code (2012 IBC, Chapters 16 and 17).
- B. Fairfax County Special Inspections Program publication: Current Edition.
- C. American Institute of Steel Construction (AISC): Manual of Steel Construction.
- D. American Institute of Steel Construction (AISC): Code of Standard Practice.
- E. Welding: American Welding Society (AWS) "Structural Welding Code."

1.04 QUALITY ASSURANCE

- A. Examine Drawings and Specifications prior to bidding or executing work. Notify the Architect immediately should omissions or errors be discovered.
- B. Furnish templates as required for proper installation of anchor bolts. Furnish instructions for setting anchor bolts and ascertain that they are properly set during the progress of the work.
- C. All welders, both shop and field, shall be certified qualified operators, in accordance with the requirements of the American Welding Society.
- D. The Specifications as written do not separate the responsibilities of the fabricator and erector. In the event that the Contractor elects to subdivide responsibilities of this section to two or more sub-contractors, the Contractor shall coordinate the work.
- E. Testing: The Owner shall retain the services of a testing and inspection agency. The testing and inspection agency shall perform the following:
 - 1. Inspect high-strength bolted connections, visually inspect welded connections, perform required tests and inspections, and prepare test reports.

2. Submit three copies of test reports to the Architect.
 3. Review mill test reports and certify compliance with Specification requirements to the Architect.
 4. If steel is not accompanied by test reports, or if test reports fail to verify compliance, perform additional tests in compliance with procedures specified in the appropriate ASTM specifications and prepare test reports.
 5. Conduct and interpret the tests and state in each report whether the test specimens comply with the requirements.
 6. Verify dry mil thickness of shop prime coat.
 7. Perform additional tests, at Contractor's expense, as may be necessary to reconfirm any noncompliance of the original work, and as may be necessary to show compliance of corrected work.
 8. Shop Welding: Inspect and test during fabrication of structural steel assemblies, as follows:
 - a. Certify welders and conduct inspections and tests as required. Record types and locations of all defects found in the work. Record work required and performed to correct deficiencies.
 - b. Perform visual inspection of all welds.
 - c. Non-destructive testing of welds.
 - d. Verify fabricator participates in the AISC Quality Certification program and is designated as an AISC certified plan category std.
- F. If the fabricator does not participate in the AISC Quality Certification Program and is not designated as an AISC certified plan, Category STD, Special Inspections will be required and performed.
1. Payment for special inspections that are required will be the responsibility of the contractor
- G. Coordination: Close coordination, exchange of shop drawings, and cooperation is required of the fabricators and erectors of structural steel, steel joists, metal deck, studs, precast work and masonry.

1.05 SUBMITTALS

- A. Special Inspections: This project is subject to the requirements of The Fairfax County Special Inspections Program. All shop drawings showing details and layouts of structural steel components and connections shall be reviewed and

approved by both the Structural Engineer of Record and The Fairfax County Critical Structures Section.

- B Shop Drawings: Provide fabrication and erection documents for structural steel members and connections.
1. Include all information necessary for the fabrication of component parts of the structural steel system. Indicate size and weight of members.
 2. Welded Connections: Submit written welding procedures and provide complete details of welded conditions using standard AWS welding symbols and recommended standard details shown in the AISC and AWS manuals. The size, length, type and location of all welds shall be indicated. Show field welds on the erection plans.
 3. Bolted Connections: Provide information on location, type and size of all bolts.
 4. Include setting drawings and templates for anchorages which shall be installed as work of other Sections.
- C. Product Data: Submit producers' or manufacturers' data for the following, including data to show compliance with specified requirements:
1. Structural steel primer
 2. Expansion bolts
 3. Headed studs
- D. Mill test reports for each type of structural steel.
- E. Mill test reports for high strength bolts, nuts and washers, including chemical analysis, tensile strength tests, and hardness tests.
- F. Welder Qualifications: Submit evidence that welders employed in the work of this Section are currently certified under AWS qualification procedures.
- G. Certified mill test reports made by testing laboratory in accordance with ASTM A-6 shall be submitted prior to fabrication. The fabricator shall submit an affidavit that structural steel conforms to the requirements of the grades specified when requested.

1.06 QUALITY STANDARDS

- A. All workmanship shall be in accordance with the Standard Specifications for Structural Steel for Building, and the Code of Standard Practice, as adopted by the American Institute of Steel Construction, except as otherwise specified.

Exercise special care to ensure that structural steel work engaging architectural work will be straight, plumb and true, and that it will not interfere with the installation of such work.

- B. Any material or operation specified by reference to the published specifications of a manufacturer, The American Society for Testing and Materials (ASTM), The American Institute of Steel Construction (AISC), the American Welding Society (AWS), or other published standard, shall comply with the requirements of the standard listed. In case of a conflict between the referenced specification and the project specifications, the project specifications shall govern.

1.07 EXPERIENCE AND QUALIFICATIONS

- A. The fabricator/erector shall have not less than five years experience in structural steel work.
- B. The fabricator/erector shall submit a written description of fabrication and erection ability including equipment facilities, personnel, and a list of similar completed projects.
- C. Certified Welders shall be certified by a competent, experienced welding inspector or a recognized testing facility in the field of welding. The welder shall be certified to make certain welds under qualified procedures. The welder shall be qualified for each position, type weld, electrode, and thickness of base metal that he intends to weld in the shop or field. The welder shall re-qualify for a weld when he has not performed that weld within a six-month period of time. Each welder shall mark his identification symbol on his work in the shop or field.

1.08 DELIVERY STORAGE AND HANDLING

- A. Deliver steel properly marked for correct field assembly and erection.
- B. Deliver anchor bolts, washers and other anchorage devices to be built into other work in a timely manner to allow proper installation into other work.
- C. Protect steel and other accessories provided under this Section from damage, corrosion, distortion of members, and injury to shop paint. Store steel members off the ground, using platforms or pallets, in a location easily accessible for inspection.

PART 2 - PRODUCTS

2.01 STRUCTURAL STEEL

- A. Structural Steel Wide Flange Shapes: ASTM A 992 (Grade 50)

- B. Steel shapes angles, channels, bars and plates: ASTM A36 (See structural plans for specific yields)
- C. Structural steel tubing: ASTM A500, (Grade B), with a minimum of 46 KSI
- D. Structural steel pipe: ASTM A53 (grade B), Type E or S.
- E. Standard unfinished threaded fasteners:
 - 1. Bolts and nuts - ASTM A307
 - 2. Washers - ANSI B27.2
- F. Anchor bolts: F1554 (Grade 36)
- G. High strength threaded fasteners:
 - 1. ASTM A325
 - 2. ASTM A490
- H. Filler metals for welding:
 - 1. Shielded Metal-Arc Welding - AWS A5.1 or 5.5 and AWS Code
 - 2. Submerged ARC Welding - AWS A5.17 and AWS Code.
 - 3. Flux-cored Arc Welding - AWS A5.20 and AWS Code.
 - 4. Gas-Shielded Welding - AWS A5.20 and AWS Code.
- I. Electrodes:
 - 1. Use AWS Matching Base Metals- see AWS Code 4.1.1 Table.
 - 2. Use type to produce weld metal with characteristics of steel being welded.
- J. Standard Primer Paint: High solids, low VOC, rust inhibitive, all purpose primer, free of lead, chromates, and other heavy metals. Primer paint is not required for non-exposed steel where encased in masonry:
- K. Provide zinc coating for galvanizing exposed hung plates of structural steel beams or lintels encased in exterior masonry, for other structural members or assemblies not encased in masonry and exposed to the weather, shall be galvanized.
 - 1. ASTM A123 for rolled, pressed, and forged steel shapes, plates, bars, and strips.

2. ASTM A386 for assembled steel fabrications.
 3. ASTM A153 for steel hardware.
- L. Bedding mortar to be non-shrink factory-packaged grout conforming to CRD-C621; Embecco, Vibra-Foil or equal.
- M. Masonry Anchors: See Section 04200, Unit Masonry.
- N. Expansion Bolts: Zinc plated steel bolts. HSL heavy duty expansion anchors, Hilti "Kwick-Bolts," or approved equivalent.
- O. Shear Connectors: Headed stud type or threaded type, ASTM A108, Grade 1015 or 1020, cold finished carbon steel with dimensions complying with AISC specifications.
- P. Teflon expansion pads: see Section 05820, Slide Bearings (where applicable).

PART 3 - EXECUTION

3.01 FABRICATION STANDARDS

- A. Fabricate structural steel members in accordance with AISC Specifications and as indicated on the approved shop drawings.
- B. Shop Fabrication and Assembly; Fabricate and assemble structural steel members in the shop to the greatest extent possible. Assemble and weld built-up sections using methods to produce true alignment of axes without warp.
- C. Fabricate architecturally exposed structural steel in accordance with the applicable standards of the AISC. Members shall be sharp, true, and free from burrs and other irregularities. Welds shall be smooth, continuous and watertight.
- D. Except as otherwise detailed or noted on the Drawings, all connections shall be equivalent in detail to AISC standards.
- E. Welding: Where structural joints and connections are made by welding, the details of all conditions, the welding techniques, the appearance and quality of welds, and the methods used in correcting defective work shall conform to the requirements of the AISC "Specifications for the Design, Fabrication and Erection of Structural Steel Buildings," and the AWS "Structural Welding Code."
- F. High Strength Steel Bolts: Where structural joints and connections are made using high strength bolts, hardened washers and nuts tightened to a high tension, the materials, methods of installation and tension control, type of wrenches and inspection methods shall conform to "Specifications for Structural

Joints Using ASTM A325 and A490 Bolts," as approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.

- G. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning.
- H. Holes for Other Work: Provide holes required for securing other work to structural steel members and for the passage of other work through steel members, as shown on approved, final shop drawings. Provide threaded nuts welded to framing members and other specialty items as indicated.
- I. Accessories: Provide anchorage for masonry to steel members as indicated on the Drawings.
- J. Lintels and shelf angles:
 - 1. Structural steel shapes or plates of sizes noted on the Drawings.
 - a. Built-up sections where indicated with or without separators as required.
 - b. Bolted or welded as noted or as approved.
 - c. Attached to concrete or steel structural members as noted or detailed.
 - 2. Lintel Bearings at each end shall be 6" minimum on masonry, unless otherwise noted.
 - 3. Shelf angles:
 - a. Miter joints at corners.
 - b. Allow for expansion near corners and 40 ft. o. c. maximum.
- K. Column Bases: Press straightened for plates up to 4" thickness; milled for thicknesses over 4".
- L. Shop Painting:
 - 1. After inspection and before galvanizing or shipping, clean all steel surfaces to be painted. Remove loose rust, mill scale and spatter, slag or flux deposits. Clean surfaces in accordance with SSPC-SP-3 "Power Tool Clean" for concealed steel and SSPC-SP-6 "Commercial Blast Cleaning" for architecturally exposed structural steel.
 - 2. After surface preparation, apply primer paint in accordance with manufacturer's instructions and at a rate to provide a dry film thickness of

not less than 1.5 mils. Paint application method shall result in full coverage of joints, corners, edges and all exposed surfaces.

3.02 EXAMINATION OF PROJECT CONDITIONS

- A. Contractor shall examine the areas and conditions under which the work of this Section is to be installed. Notify the Architect and Owner's Representative in writing of conditions detrimental to the proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 - 1. Survey as-built anchor bolt, bearing plate, and embedded plate layouts prior to setting structural steel.
 - 2. Notify Architect and Owner's Representative if the erection of steel will deviate from the approved, final shop drawings as the result of fabrication errors, misalignment of embedded items, or other deviations.

3.03 ERECTION

- A. General: Set structural frames true and plumb and set accurately to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Clean surfaces that will be in permanent contact once assembly is completed. Make approved adjustments to compensate for discrepancies in elevation and alignment.
- B. Temporary bracing shall be introduced wherever necessary to take care of all loads to which the structure may be subjected including natural forces, erection and operation of equipment. Temporary bracing shall be removed by the Contractor when no longer required.
- C. Establish required leveling and plumbing measurements based on the mean operating temperature of the structure. Make allowances for the difference between temperature at time of erection and mean temperature for structure on a building is in service.
- D. Whenever stocks of material, erection equipment, or other loads are temporarily supported by the steel work during erection, proper provision shall be made to take care of stresses resulting from temporary loading.
- E. All final connections shall be welded or bolted as indicated on the Drawings. All bolts for bolted final connections shall be ASTM A-325 and shall be tightened to a "snug - tight" condition. All bolted connections shall have minimum capacities as shown in Tables I and II of the AISC Manual.
- F. Braces and guys: Coordinate the location of all braces and guys with the work of other trades. All removal of temporary braces, guys and struts shall be part of the work of this Section and shall be coordinated with the work sequence as

walls, floors and roof systems are constructed. All cable guys shall be double clamped and kept under tension.

- G. Welding rod ovens are required. Welding will not be permitted unless all ovens are in working order and used in accordance with the AWS Code.
- H. Column base plates and bearing plates shall be set level to correct elevations and shall be temporarily supported on steel wedges or shims until the supported members have been plumbed and grouted. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges and shims. Cut any protruding part of wedges and shims flush with edge of plate prior to grouting. The entire bearing area under plates shall be grouted solid with non-shrink grout.
- I. Pack bedding mortar solid between surfaces and bases or plates to assure that absolutely no voids remain. Finish exposed surfaces and allow ample time to cure according to manufacturer's recommendations.
- J. Splice members only where indicated on approved, final shop drawings.
- K. Gas Cutting: Field correcting of fabrication by gas cutting shall not be permitted on any major member in the structural framing without prior written approval of the Architect and Owner's Representative.
- L. Fastening of splices of compression members shall be done after the abutting surfaces have been brought completely into contact.
- M. Do not enlarge unfair holes in members by burning or by the use of drift pins. Ream holes that must be enlarged to receive bolts.
- N. Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth.
- O. Field Welds: Comply with AISC specifications for removal of shop paint on surfaces adjacent to field welds.
- P. Masonry Expansion Bolts: Anchor only to solidly grouted masonry which has cured for a minimum of three days. Install expansion bolts in accordance with manufacturer's written instruction, using only masonry carbide bits for drilling. Provide a minimum embedment of bolt into masonry of 5" unless noted otherwise on Drawings.
- Q. Touch-Up Painting: After erection and final adjustments, wire brush clean and paint scarred surfaces, field welds, and rust spots using the same type of paint as that applied in the shop.

3.04 TOLERANCES

- A. Individual pieces shall be erected so that the deviation from plumb, level and alignment shall not exceed 1 to 500.

3.05 FIELD QUALITY CONTROL

- A. Owner will employ an independent testing and inspection agency to inspect high strength bolted connections and welded connections and to perform tests and prepare test reports for all field inspections.
- B. When required by IBC-1704, Special Inspections, the testing and inspection agency shall visit and inspect the fabricator's plant. The agency shall verify fabricator's compliance with the AISC Quality Certification Program for the appropriate category and with other SIFC-2000 and IBC Chapter 17 requirements.
- C. The testing and inspection agency shall conduct tests in accordance with SIFC-2000 and IBC-1704 requirements, shall interpret the tests and shall state in reports whether the test specimens comply with or deviate from test requirements.
- D. Correct deficiencies in structural steel work that has been determined not to be in compliance. Additional tests, performed by contractor, which reconfirm non-compliance of original work or which are necessary to confirm compliance of corrected work, shall be at contractor's expense.

END OF SECTION

SECTION 05230

METAL ROOF DECKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Structural Steel: Section 05120
- B. Miscellaneous steel for support of roof openings: Section 05500, Metal Fabrication.

1.03 QUALITY ASSURANCE, CODES AND STANDARDS

- A. Comply with the provisions of the following codes and standards, except as otherwise shown or specified.
 - 1. Fairfax County Special Inspections Program publication: Current Edition.
 - 2. Steel Deck Institute "SDI Manual of Construction with Steel Deck."
 - 3. "SDI Design Manual for Composite Decks, Form Decks and Roof Decks – No. 30."
 - 4. AISI "Specification for the Design of Cold-Formed Steel Structural Members."
 - 5. AWS "Specification for Welding Sheet Steel in Structures."
 - 6. AISC "Specifications for Design of Light Gauge Cold-Formed Steel Structures."
 - 7. Job Site Safety: OSHA Regulation CFR 1926, Subparts M and R.

1.04 QUALIFICATION OF WELDING WORK

- A. Qualify welding processes and welding operators in accordance with the AWS "Standard Qualification Procedure".

1.05 PERFORMANCE REQUIREMENTS

- A. Compute the properties of metal roof deck sections on the basis of the effective design width as limited by the provisions of the AISI Specifications. Provide not less than the depth and gauges shown.
- B. Uplift Loading: Install and anchor roof deck units to resist gross uplift loading of 20 pounds per square foot for roof areas.

1.06 SUBMITTALS

- A. Submit manufacturer's specifications and installation instructions for each product specified. Include manufacturer's certification as may be required to show compliance with these specifications. Indicate by transmittal form that a copy of each instruction has been distributed to the Installer.
- B. Submit detailed drawings showing layout of deck panels, anchorage details and every condition requiring closure panels, supplementary framing, special jointing or other accessories.

1.07 INSPECTION

- A. Welding performed in conjunction with work in this Section is subject to inspection by the Owner's testing and inspection agency and as required by Fairfax County Special Inspections. The Owner will pay for all required testing. The Contractor shall be responsible for proper notification to the testing agency prior to performance of welding operations.
- B. Decking welded in place is subject to inspection and testing. Expense of removing and replacing any portion of decking for testing purposes will be borne by the Owner if welds are found to be satisfactory. Remove and replace work found to be defective and not complying with requirements. Expense of replacing defective work shall be borne by the Contractor.

1.08 DELIVERY AND STORAGE

- A. Deliver and store deck bundles in a location on the project site that will allow proper and safe access by the hoisting equipment to the building structure.
- B. Protect bundles from weather and damage. Store above ground and covered, with one end elevated. Use ventilated, waterproof coverings to avoid condensation on deck surface.
- C. Deck bundles shall be stacked in a manner to avoid tipping, sliding or shifting while being stored.
- D. Inspect bundles for tightness during storage. Provide additional securement if necessary.

PART 2 - PRODUCTS**2.01 MATERIALS**

- A. Refer to Structural Drawings for type and gauge of roof deck.
- B. Steel: ASTM A653, Grade A (galvanized deck)
- C. Miscellaneous Steel Shapes: ASTM A-36.
- D. Sheet Metal Accessories: ASTM A526, commercial quality, galvanized.
- E. Galvanized zinc coating conforming to ASTM A924, G60.
- F. Prime Paint: Manufacturer's baked-on, rust inhibitive paint, for application to chemically cleaned and phosphate chemical treated metal surfaces.

2.02 FABRICATION

- A. General: Form deck units in lengths to span 3 or more support spacings, with flush, telescoped or nested 2" end laps and nesting side laps, unless otherwise shown or specified. Provide deck configurations complying with SDI Design Manual Specifications, and as specified herein.
- B. Intermediate-Rib Deck: Prime painted, depth approximately 1 1/2"; ribs spaced approximately 6" o. c.; width of rib opening at roof surface not more than 1 3/4"; width of bottom rib surface not less than 1". Provide closures, anchor clips, sump pans for roof drains and all other necessary pieces for a complete installation.
- C. Acoustical Wide Rib Deck: Prime painted, galvanized deck, depth approximately 1-1 1/2"; ribs spaced at 6" o. c.; width of rib opening at roof surface not more than 2-3/8"; width of bottom rib surface not less than 1-3/4". Webs of the ribs shall be perforated by 5/32" diameter holes staggered 3/8" o. c. The sound absorbing elements of glass fiber shall be furnished by the manufacturer for installation by the roofing contractor.

PART 3 – EXECUTION**3.01 INSPECTION**

Examine the areas and conditions under which metal roof decking items and corrugated steel forms are to be installed. Notify the Architect and Owner's Representative in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with recommended practices listed in the "SDI Manual of Construction with Steel Deck."
- B. Install roof deck units and accessories in accordance with manufacturer's recommendations, approved final shop drawings, and as specified.
- C. Do not start placement of roof deck units before all supporting members are installed. Place roof deck units on supporting steel framework and adjust to final position with ends bearing on supporting members and accurately align end to end before being permanently fastened. Lap ends not less than 2". Do not stretch or contract the sidelap interlocks. Place deck units flat and square, secured to adjacent framing, without warp or excessive deflection.
- D. Coordinate and cooperate with structural steel erector in positioning decking bundles to prevent overloading of structural members.
- E. Do not use deck units for storage of working platforms until permanently secured in position.
- F. Permanently fasten roof deck units to steel supporting members by not less than 1/2" diameter puddle welds, spaced 6" o. c. maximum at end laps and 12" o. c. at intermediate supports. Secure deck to each supporting member where side laps occur. Side laps shall be mechanically fastened at 24" o. c. maximum, unless noted otherwise.
 - 1. Use welding washers where gauge of decking is thinner than 22 gauge.
- G. Comply with AWS requirements and procedures for manual shielded metal-arc welding, the appearance and quality of welds, and the methods used in correcting welding work.
- H. Cut and fit roof deck units and accessories around other work projecting through or adjacent to the roof decking. Provide neat, square, and trim cuts.

3.03 REINFORCEMENT AT OPENINGS

- A. Provide additional metal reinforcement and closure pieces as required for strength and continuity of decking and support of other work. Refer to structural drawings for roof opening and equipment support. Unless noted otherwise, provide the following:
 - 1. Openings less than 15" in any dimension: Reinforce roof decking around openings by means of a flat steel sheet placed over the opening and fusion welded to the top surface of the deck. Provide steel sheet of the same quality as the deck units, not less than nominal 0.0359" (20 gauge) thick before coating, and at least 12" wider and longer than the openings.

METAL ROOF DECKING

SECTION 05230

Provide welds at each corner and spaced not more than 12" o. c. maximum along each side.

2. For deck openings from 15" wide to 30" wide, and not supported by structural members: Weld a 1-1/2" x 1-1/2" x 3/16" steel angle to the underside of the roof deck at right angles to the roof deck ribs. Angle shall span joist to joist. Support the side parallel to the roof deck ribs with a 12" wide, 20-gauge steel sheet placed on the top surface of the decking, welded at each corner of the opening and spaced not more than 12" o. c. maximum along each side.

3.04 ROOF INSULATION SUPPORT

- A. Provide metal closure strips for the support of roof insulation where the rib openings in the top surface of roof decking occur adjacent to edges and openings. Weld closure strips into position.

3.05 TOUCH-UP PAINTING

- A. After roof decking installation, wire brush, clean and paint scarred areas, welds and rust spots on the top and bottom surfaces of decking units and supporting steel members. Touch-up shop galvanizing that is chipped or abraded or damaged with the same galvanized paint or as recommended by the deck manufacturer. Patch and close all holes in deck created by welding, prior to touch-up.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 REFERENCE DOCUMENTS

- A. ASTM A36 - Structural Steel.
- B. ASTM A53 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated Welded and Seamless.
- C. ASTM A283 - Low and Intermediate Tensile Strength Carbon Steel Plates, Shapes and Bars.
- D. ASTM A501 - Hot Formed Welded and Seamless Carbon Steel Structural Tubing.
- E. ASTM A512 - Cold-Drawn Buttweld Carbon Steel Mechanical Tubing.
- F. AWS - American Welding Society Structural Welding Code.
- G. "Metal Finishes Manual" Published by National Association of Architectural Metal Manufacturer's (NAAMM).

1.03 RELATED WORK- NOT APPLICABLE.

1.04 DESCRIPTION OF WORK

- A. Miscellaneous metal work shall include items fabricated from iron and steel plates, bars, strips, tubes, pipes and castings that are not a part of structural steel or other metal systems.
- B. Miscellaneous metal work shall include loose lintels or other supports that are not part of building structural system.

1.05 SUBMITTALS

- A. Submit Shop Drawings for fabrication and erection of miscellaneous metal assemblies. Includes plans and elevations at not less than 1/4 inch to 1 ft.-0 in.

scale and include details of sections and connections at not less than 3 in. to 1 ft.-0 in. scale. Indicate all anchorage and accessory items.

PART 2 - PRODUCTS

2.01 METALS

A. Steel:

1. Structural shapes, bars, plates: ASTM A36.
2. Steel plates to be bent or cold-formed: ASTM A283, grade C.
3. Structural tubing: ASTM A501.
4. Cold-drawn tubing: ASTM A512.
5. Pipe: ASTM A53, Type E, Grade E, galvanized where exposed to weather.
6. Flat Rolled Steel Sheets: ASTM A611, class I (cold rolled), or ASTM A570 (hot rolled). Galvanized steel sheets: ASTM A525 and ASTM A526; G90 coating.
7. Steel Bars: hot rolled, ASTM A575; other bars or bar shapes, ASTM A663 or ASTM A36.

B. Expansion shields: Type and size to support load imposed.

C. Aluminum Tube Railing: Extruded type. (Brushed Satin finish / Anodized)

D. Stainless Steel:

1. Bar Shapes and Forgings: ASTM A276, type best suited for purpose.
2. Plates, Sheets and Strips: STM A167 or A176, type best suited for purpose.

E. Fasteners

1. General: Furnish all bolts, nuts, screws, clips, washers, and any other fastenings necessary for proper erection of items specified herein.
 - a. For ferrous metal use stainless steel on exterior. On interior match adjacent material, or if not applicable, provide zinc coated fasteners.

- b. For stainless steel, AISI 300 Series Stainless Steel. Unless noted otherwise, exposed screws shall be Phillips flat head, countersunk.
2. Products:
- a. Toggle Bolts: FS FF-W-84.
 - b. Bolts & Nuts: ASTM A 307, grade A, hex head.
 - c. Lag Bolts: FS FF-B-561, square head.
 - d. Machine Screws: Cadmium-plated steel, FS FF-S-92.
 - e. Wood Screws: Carbon Steel, FS FF-S-111, flat head.
 - f. Washers: Carbon Steel, FS FF-W-92, round.
 - g. Expansion Shields: FS FF-S-325.
 - h. Lock Washers: Carbon Steel, FS FF-W-84, helical spring type.
 - i. Powder Driven Fasteners: FS FF-P-395; comply with ANSI A10.3.
- F. Welding Electrodes: As permitted by AWS Code D1.1.

2.02 ACCESS DOORS

- A. Access doors shall be furnished and installed in accordance with requirements of Mechanical and Electrical Sections and the Drawings. Doors shall be the product of Inryco/Milcor, Karp or pre-bid approved equal. Install in accordance with the manufacturer's printed instructions as modified herein.
- B. Where walls or ceilings consist of fire-resistive assemblies, doors shall be UL rated the same as the wall or ceiling in which they are installed. Doors shall be as inconspicuous as possible and shall receive the same finish as the material in which they are installed. Utilize doors specifically designed for installation in the type of wall or ceiling material involved.

2.03 LADDERS

- A. Provide galvanized steel ladders at all locations indicated on the drawings. Use welded construction with all welds ground smooth and no visible grind markings. Unless detailed otherwise, construction shall be as follows:
 - 1. Stringers: 2 1/2" x 3/8" flat bar, spaced. Space 24" apart.

2. Rungs: 3/4" round bars, spaced 12" on center, let into stringers.
 3. Anchor Brackets: 4" x 6" x 3/8" angle, 4" long. Minimum of two per string, maximum spacing 4'-0".
- B. Furnish galvanized bolts with expansion shields to install ladders against concrete and masonry walls.
- C. Provide handholds mounted on walls in conjunction with ladders where shown in the drawings. Handholds shall be fabricated of 1-inch nominal diameter steel pipe, fitted with flanges, and mounted securely on the wall.

2.04 STEEL AND ALUMINUM RAILINGS

A. Performance Requirements

1. Structural Performance: Design, engineer, fabricate, and install the following metal fabrications to withstand the following structural loads without exceeding the allowable design working stress of the materials involved, including anchors and connections. Apply each load to produce the maximum stress in each respective component of each metal fabrication.
 - a. Top Rail of Guardrail Systems: Capable of withstanding the following minimum loads applied as indicated:
 - 1) Concentrated load of 200 pounds applied at any point in any direction and non-concurrently with uniform load.
 - 2) Uniform load of 100 pounds per linear foot applied non-concurrently with concentrated load, acting vertically downward.
 - b. Handrails Not Serving as Top Rails: Capable of withstanding the following loads applied as indicated:
 - 1) Concentrated load of 200 pounds applied at any point and in any direction, non-concurrently with uniform load.
 - 2) Uniform load of 50 pounds per linear foot applied in any direction, acting non-concurrently with concentrated load.
 - c. Infill Area of Guardrail Systems: Capable of withstanding a horizontal concentrated load of 200 pounds applied to one square foot at any point in the system including panels, intermediate rails balusters, or other elements composing the infill area.

- d. Treads of Steel Stairs: Capable of withstanding a uniform load of 100 pounds per square foot or a concentrated load of 300 pounds on an area of 4 square inches located in the center of the tread, whichever produces the greater stress.
 - e. Platforms of Steel Stairs: Capable of withstanding a uniform load of 100 pounds per square foot.
- B. Railing shall be smooth with welded connections. Welded connections shall be ground smooth with no visible grind markings. Joints shall be flush, with concealed fittings.
 - C. Railing shall be constructed of steel or aluminum members of sizes and shapes indicated.
 - D. Rails shall run continuously to each post.
 - E. Posts at concrete shall be set plumb in pipe sleeves with non-shrink grout.
 - F. Handrail brackets: Malleable iron or steel, standard units, complete with mounting plates and anchoring accessories. Handrails shall be secured to masonry and concrete surfaces by wall brackets with expansion bolts.
 - G. Fabricate handrails to provide end returns to wall.

2.05 PIPE SLEEVES

Sleeves through masonry or concrete shall be standard weight, wrought iron or galvanized steel, size to allow 1/4 inch between sleeve and pipe.

2.06 LOOSE LINTELS AND SUPPORTS

- A. Provide loose structural steel angles, bearing plates, channels, tees, plates, and other steel items as detailed for masonry opening lintels, roof and floor openings, and other locations shown on drawings. Provide galvanized steel for loose items exposed to weather.
- B. Length of lintels shall be as required to provide minimum bearing of 4 inches at each end. Where minimum bearing cannot be obtained due to proximity of structural framing member, anchor lintel with clip angle expansion bolted to concrete framing member or welded to steel framing member.
- C. Furnish loose lintels and other-support accessories as part of the work of this Section. Installation of loose lintels shall be under UNIT MASONRY SECTION 04200.

2.07 PAINT

- A. Metal primer paint: Rust inhibitive primer, Fed. Spec. TT-P-86, Type II or TT-P-645 (zinc chromate type).
- B. Galvanizing: Provide zinc coating for all items exposed to weather or otherwise specified for galvanizing,
 - 1. ASTM A153 for iron and steel hardware
 - 2. ASTM A123 for rolled, pressed, and forged steel shapes, plates, and bars.
 - 3. ASTM A386 for assembled steel items

2.08 BRICK VENTS

- A. See Section 10200, Louvers and Vents.

2.09 SAFETY TREADS AND NOSINGS - EXTERIOR CONCRETE STAIRS

- A. Provide and install cast aluminum safety treads and nosings with abrasive grit surface on all treads of exterior stairs. Dimensions: treads and nosings shall be 4" wide x 6" less than the width of the concrete stair treads.
- B. Approved Manufacturers:
 - 1. Wooster Products, Inc., Wooster, OH, Type 101, shall be the basis of specification (www.wooster-products.com). Comparable products of the following manufacturers shall be acceptable.
 - 2. Safe-T-Metal Co., Inc., Syracuse, NY, Style AX (1-800-886-7238)
 - 3. American Safety Tread, Helena, AL, Style 801, (www.americansafetytread.com).
- C. Features:
 - 1. "Alumogrit" abrasive cast aluminum #43 prime and secondary ingot, low copper content; corrosion resistant.
 - 2. Abrasive #20 virgin grain aluminum oxide abrasive, integrally cast into the walking surface. Minimum depth: 1/32" (.79 mm).
 - 3. Cross-hatching: 1/16" (1.59 mm) deep minimum.
 - 4. Fasteners: 1/4" (6.35 mm) plated screws and nuts with steel wing anchors. Holes for fasteners shall be machine made in the factory.

2.10 VERTICAL CHASES

- A. Fabricate vertical mechanical pipe chases of minimum 16-gauge sheet steel, shop primed for finish field painting. Refer to drawings for locations and profiles. All chases shall fit tightly to adjacent construction and surfaces. Provide bent metal framing and vertical reinforcement as required by drawings.
 - 1. Extend chases a minimum of 4 inches above finished ceiling.
- B. Fabrication and installation of horizontal pipe chases for mechanical equipment is covered under Division 15.

2.11 STEEL STAIRS

- A. General: Construct stairs to conform to sizes and arrangements indicated on drawings. Join pieces together by welding, unless otherwise indicated. Provide complete stair assemblies, including metal framing, hangers, columns, railings, newels, balusters, struts, clips, brackets, bearing plates, and other components necessary for the support of stairs and platforms, and as required to anchor and contain the stairs on the supporting structure.
 - 1. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM "Metal Stair Manual" for commercial class except where more stringent requirements are indicated.
 - 2. Fabricate treads and platforms of exterior stairs to accommodate slopes to drain in finished traffic surfaces.
- B. Stair Framing: Fabricate stringers of structural steel channels, or plates, or a combination thereof, as indicated. Provide closures for exposed ends of stringers. Construct platforms of structural steel channel headers and miscellaneous framing members as indicated. Bolt or weld headers to strings, newels, and framing members to strings and headers; fabricate and join so that bolts, if used, do not appear on finish surfaces.
- C. Metal Pan Risers, Subtreads and Subplatforms: Shape metal pans for risers and subtreads to conform to configuration shown. Provide thickness of structural steel sheet for metal pans indicated, but not less than that required, to support total design loading.
 - 1. Form metal pans of uncoated cold-rolled steel sheet, unless otherwise indicated.
 - 2. Attach risers and subtreads to stringers by means of brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting or bolting.

- D. Provide Subplatforms of configuration and construction indicated; if not indicated, of same metal as risers and subreads, in thickness required to support design loading. Attach subplatform to platform framing members with welds.
- E. Stair Railings and Handrails: Comply with applicable requirements specified elsewhere in this section for steel pipe railings and handrails, and as follows:
 - 1. Make bends of consistent radius, preserving the contour of the pipe, or use prefabricated fittings.
 - 2. Connect railing posts to stair framing by direct welding or as otherwise indicated.
 - 3. Interior handrails to be aluminum as shown in Part 2: Products; Metals 2.01 C.

2.12 FABRICATION

- A. Use materials of size and thickness indicated, or if not indicated, of the required size and thickness to produce adequate strength and durability in the finished product for intended use. Work to dimensions indicated on drawings using industry proven details of fabrication and support.
- B. Form exposed work with accurate angles and surfaces and straight sharp edges. Ease exposed edges to radius of approximately 1/32 in. unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or impairing work.
- C. Weld corners and seams continuously and in accordance with recommendations of AWS. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- D. Form exposed connections with hairline joints flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type indicated, or if not indicated, use Phillips flathead, countersunk screws or bolts.
- E. Provide for anchorage of type required, coordinated with supporting structure and the progress schedule. Fabricate and space anchoring devices as required to provide adequate support for intended use.
- F. Cut, reinforce, drill, and tap miscellaneous metal work to receive other items.
- G. Shop Painting:
 - 1. Shop paint miscellaneous metal work, except members or portions of members embedded in concrete or masonry, surfaces and edges to be field-welded, and galvanized surfaces.

2. Remove scale, rust and other deleterious materials before shop paint is applied. Clean surfaces in accordance with Steel Structures Painting Council, SP-3.
 3. Apply one shop coat of metal primer paint to fabricated metal items.
- H. Fabricate miscellaneous units to the sizes, shapes and profiles indicated or, if not indicated, of the required dimensions to receive adjacent grating, plates, doors or other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars of welded construction using mitered corners, welded brackets and splice plates and minimum number of joints for field connections. Equip units with integrally welded anchor strips for casting into poured concrete. Furnish inserts if units must be installed after concrete is poured; except as otherwise indicated, space anchors 2 feet 0 inch o. c.
- I. Custom fabricate pipe railings to dimensions and details indicated, with smooth bends and welded joints ground smooth and flush.
- J. Fabricate ladders for locations indicated, with dimensions, spacing details and anchorage as required. Comply with the requirements of ANSI A14.3. For rungs other than round bars, such as ships ladders with flat plate or tubular rungs, provide non-slip surface on the top of each rung, either by coating the rung with aluminum oxide granules set in epoxy resin adhesive, or by using a manufactured rung filled with aluminum oxide grout; or provide heavily serrated profiles.
- K. For fabrication of work exposed to view, use only materials which are smooth and free of surface blemishes such as pittings, seam marks, roller marks, trade names and roughness. Remove blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coatings.
- L. Preassemble items in shop to greatest extent possible to minimize field splicing and assembly of units at project site.

PART 3 - EXECUTION

3.01 FIELD CONDITIONS

- A. Verify measurements in field for work fabricated to fit job conditions.
- B. Before starting work, examine adjoining work on which miscellaneous metal work is supported, or to which it is fitted or joined.
- C. Provide anchorage devices and fasteners where necessary for securing miscellaneous metal items to in-place construction including threaded fasteners

- for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connections as required.
- D. Perform cutting, drilling and fitting required for installation of miscellaneous metal items. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels.
 - E. Fit exposed connections accurately together to form tight hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces for exterior units that have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

3.02 FIELD WELDING

- A. Comply with AWS Code for procedures for manual shielded metal-arc welding, the appearance and quality of welds made and the methods used in correcting welding work.

3.03 TOUCH-UP PAINTING

- A. Immediately after erection, clean field welds, bolted connections and abraded areas of the shop paint, and paint exposed areas with same materials used for shop painting.

END OF SECTION

SECTION 06100
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of contract, including General Conditions and Division One, Specification Sections, apply to the work of this Section.

1.02 REFERENCE STANDARDS

- A. FS TT-W-571 - Wood Preservation: Treating Practices.
- B. APA - American Plywood Association.
- C. ASTM A 153 – Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
- D. International Code Council (ICC); International Building Code.

1.03 RELATED WORK

- A. Temporary, rough framed exterior weather enclosure for doors, windows and other openings are covered under Section 01520, Construction Aids.
- B. Bolts and other fasteners: see Section 05500, Metal Fabrication.

1.04 GRADING RULES

- A. Grading of lumber of various species in accordance with American Softwood Lumber Standard PS 20-15, U.S. Department of Commerce (National Grading Rule).
- B. Each piece of yard, structural lumber shall bear official grade mark of appropriate inspection bureau or association.

PART 2 - PRODUCTS

2.01 WOOD

- A. Exterior blocking: No. 2 dimension Southern Yellow Pine, preservative treated.
- B. Interior grounds, nailers, furring and blocking: No. 2 dimension Southern Yellow Pine, fire-retardant treated.

- C. Interior Plywood: 3/4" thick APA INT BC fire retardant treated for Main Communications Room, Telephone, CATV and Electric Closets, and other utility spaces shown on the Drawings. Panels shall be 8'-0" tall.
- D. Exterior Plywood sheathing: 1/2" thick exposure CD fire treated unless noted otherwise.

2.02 LUMBER SIZE AND MOISTURE CONTENT

- A. Lumber: Surfaced 4 sides (S4S).
- B. Board, dimension lumber: Either air or kiln dried with moisture content in accordance with National Grading Rule, but not exceeding 19 percent for dimension lumber and board lumber 8 inch or less in width.

2.03 PRESERVATIVE TREATMENT

- A. Lumber in contact with masonry, concrete, earth or roof cants: Preservative treated.
- B. Preservative treat by pressure method; Alkaline Copper Quaternary (ACQ). Preservative treatments containing arsenic or chromium shall not be acceptable. "Naturewood" by Osmose, Inc. or other products meeting the requirements of the ICC shall be acceptable.
 - 1. Certain metal products may corrode when in direct contact with ACQ. Use only hot dipped galvanized or other fasteners recommended by the hardware manufacturers for direct contact with ACQ. Hot dipped galvanized fasteners shall comply with ASTM A153.
- C. Season treat lumber after preservative treatment to moisture content specified for nontreated lumber.
- D. Label treated lumber except furring and grounds with name of treater and type of preservative used.
- E. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment. Inspect each piece of lumber after drying and discard damaged or defective pieces.

2.04 FIRE-RETARDANT TREATMENT

- A. Fire-retardant treated lumber or plywood: AWPA standards for pressure impregnation with fire-retardant chemicals to achieve flame spread rating of not more than 25; UL Test 723, ASTM E84 or NFPA Test 355.
- B. Provide UL label on each piece of fire-retardant treated item.

- C. Season treat items after fire retardant treatment to moisture content specified for non-treated items.

2.05 MISCELLANEOUS MATERIALS

- A. Provide fasteners and anchorages of size and type as indicated and recommended by applicable standards, complying with federal specifications for nails, screws, staples, bolts, nuts, washers and anchoring devices.

PART 3 - EXECUTION

3.01 INSTALLATION GENERAL

- A. Frame, fit closely, set framing accurately to required lines levels. Secure rigidly in place. Size blocking to provide a true surface for finishing. Provide special blocking for construction not indicated or specified but required to complete work.
- B. Provide wood grounds nailers, blocking, as indicated for screeding or attachment of other work. Form to shapes indicated and cut as required to maintain tolerances specified for work to be attached. Coordinate location with adjoining work. Secure to substrate as required to support applied loading. Counter-sink bolts and nuts flush with surface.

3.02 PLYWOOD

- A. Install fire retardant treated plywood panels on walls for special system terminal cabinets and telephone and electric equipment as required by utility companies in Main Communications Room and other utility closets identified on the Drawings. Provide 8'-0" tall panels in widths as indicated below.
- B. Main Communications Room (Surface all walls with plywood)
 - 1. Elementary Schools:
 - a. Fire Alarm and Telecommunications: 6'-0" wide
 - b. Security, Sound, CATV and Emergency Panels: 3'-0" wide.
 - 2. Middle Schools and High Schools:
 - a. Fire Alarm and Telecommunications: 10'-0" wide.
 - b. Security: 5'-0" wide.
 - c. Sound: 8'-0" wide.
 - d. CATV: 4'-0" wide.
 - e. Emergency Panels: 3'-0" wide.

C. Telephone and CATV Service Demarcation Closets: 6'-0" wide

END OF SECTION

SECTION 07410

METAL ROOF SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. See Roof Plans and Details
- B. Section 07600-Flashing and Sheet Metal

1.03 DESCRIPTION OF WORK

- A. This work involves installation of new, sloped metal roof system supported by decking on new sloped roof.
- B. Extent of metal roof system as indicated on drawings and by provisions of this section and is defined to include roof panels, roof insulation, louvers, metal soffit panels, eaves, and gable trim, gutters, roof mounted equipment curbs, plumbing vent flashings, sealants, fasteners, and miscellaneous flashings, closures and accessories directly related to the metal roof and snow retention systems.

1.04 QUALITY ASSURANCE

- A. Single-Installer Responsibility: A single Installer ("Roofer") shall perform the work of this section; and shall be a firm specializing in metal roof system work for at least ten (10) years, capable of showing successful installations similar to work required for project. The roofing contractor must have an office, warehouse with supplies, and permanent roofing crews within a 30-mile radius of Fairfax City, Virginia, in order to be considered a responsible bidder on Fairfax County Public Schools roofing work.
- B. Manufacturers: The Manufacturer of the metal roof system shall have been regularly engaged in the fabrication of metal standing seam roof systems for at least ten (10) years. All materials shall be new, unused, and free from defects.
- C. Pre-Roofing Conference: Prior to installation of roofing system, meet at project site with Installer (Roofer), and Owner's representatives. Tour representative areas of roofing and discuss substrate condition. Review requirements of contract documents, submittal, status of coordinating work, availability of materials and installation facilities, proposed installation schedule, requirements for inspections and testing or certifications, forecasted weather conditions,

governing regulations, insurance requirements, and proposed installation procedures.

D. Design Criteria:

1. Design loads shall include live snow and wind in addition to dead loads.
2. Snow loads: Roof panels and support member shall be designed for a ground snow load of thirty (30) pounds per square foot (psf) uniformly distributed over the vertical projection of the roof surface in accordance with the current Virginia Uniform Statewide Building Code (VUSBC). Roof panels and support members at lower levels of multilevel roofs, valley areas, or major roof projections shall be designed for snow accumulations as specified in the building code, or in the absence of specific criteria, by ANSI A 58.1 standard.
3. Wind Loads: Roof panels, clips, and fasteners shall be designed for a basic wind speed of one hundred fifteen (115) mph applied in accordance with the Virginia Uniform Statewide Building Code for Exposure C.

1.05 SUBMITTALS

- A. Production Data: Submit manufacturers product information, specifications, and installation instructions for building components and accessories insulation.
- B. Shop Drawings: Submit complete erection drawings showing covering and trim details, and accessory installation details to clearly indicated proper assembly of building components.
- C. Installer Certification: Submit certificate one week prior to bid date that the metal roof systems installer has been regularly engaged in the installation of pre-engineered metal roofing of the systems specified.
- D. Samples: Submit samples two (2) each of the following for Architect's review. Samples will be used as basis for evaluating quality of finished roofing system including wall and soffit panels.
 1. Twelve inches long by actual width of roofing, liner panel, and siding panels, with required finishes.
 2. Fasteners for application of roofing, siding, and soffit panels.
 3. Sealants and closures.
 4. Twelve inches long minimum by 12 inches wide minimum of actual standing seam side lap seams for both sides of a typical panel.

5. Length and width as required for actual standing seam roof panel and lap seam including stiffeners and fasteners and side lap seams both sides of typical panel. Typical Panel shall be 16" on center, 1 ½" standing seam double locked or otherwise approved by FCPS.
- E. Submit calculations with registered engineers seal, verifying roof panel and attachment methods resist wind pressures imposed on it pursuant to applicable building codes and project design parameters.
- F. CHPS Minimum Recycled Content Level: Submit data that the aluminum material qualifies as a contributor for MW.C2 credit for minimum recycled content level.

1.06 JOB CONDITIONS

- A. Weather Condition Limitations: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturer's recommendations and warranty requirements.

1.07 PRODUCT HANDLING

- A. General: Deliver and store prefabricated components, sheets, panels, and other manufactured items so they will not be damaged or deformed. Stack materials on platforms or pallets, covered with tarpaulins or other suitable weathertight ventilated covering. Store metal sheets or panels so that water accumulations will drain freely. Do not store sheets or panels in contact with other materials that might cause staining.
- B. Roof Loading: Do not store materials on roof decks, nor position roofing installation equipment on roof decks, in concentrations exceeding design live loading. All materials will have to be stored in trailers or other weatherproof housings until required to be installed on the roof.
- C. Do not use cranes to hoist materials onto the roof when the building is occupied.

1.08 WARRANTIES

- A. Provide manufacturer's written weathertightness warranty for a minimum of ten (10) years against leaks in the entire roof system including all roof panels, flashing, interior gutters, etc., arising out of or caused by ordinary wear and tear under normal weather and atmospheric conditions.
- B. Provide manufacturer's standard paint film written warranty for twenty (20) years against cracking, peeling, chalking, and fading of metal roof, soffit and wall panels
- C. Inspection and Report Services: Metal roof system manufacturer or his authorized agent shall perform an inspection of the entire roof system and shall

submit a written report to the Owner detailing all conditions requiring maintenance and repair by parties under the above warranties. Inspections and reports shall be performed once every other year over the ten (10) year weathertightness warranty period. Cost of Inspection and Report Service shall be included in the contract amount.

1.09 INSPECTIONS AND JOB CONTROL

- A. A qualified technical representative of the manufacturer shall be available to make recommendations necessary to ensure compliance with the specifications and to make recommendations where unforeseen conditions become apparent to the Architect.
- B. As soon as all construction under this Section, as well as any construction which could in any way affect construction under this Section, has been completed, a final inspection of the roofing system shall be made by a qualified representative of the roofing manufacturer.

1.10 MAINTENANCE INSTRUCTIONS

- A. At the time of issuance of the warranty, a full set of instructions shall be included detailing preventative maintenance and noting a list of harmful substances that may damage the roofing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Hot-Rolled Structural Shapes: ASTM A36 or A529.
- B. Tubing or Pipe: ASTM A500, Grade B; ASTM A501; or ASTM A53.
- C. Members Fabricated from Plate or Bar Stock: 50,000 psi minimum yield strength; ASTM A529, A570, or A572 or A607.
- D. Members Fabricated by Cold Forming: ASTM A607 or A570, Grade 50.
- E. Aluminum Sheet: Coil-coated .032 aluminum sheet (ASTM B209M), Alloy 3105-H14 for painted finishes, with temper as required to suit forming operations and structural performance required.

2.02 ROOFING AND SIDING

- A. General: Provide roofing and siding sheets roll formed to profile indicated and specified. Provide flashings, closures, fillers, metal expansion joints, ridge

covers, roof panel mounting clips, gable and eaves trim, gutters, and other sheet metal accessories as required. Material and finish shall be as specified.

- B. Metal roofing shall be site locally manufactured 1 1/2" (±) double locked standing seams, with seams 16" on center in continuous lengths and incorporating pencil rib or striated profiles as directed by Owner, from Petersen Aluminum Corporation, Englert Inc, DMI, Atas Inc. or Approved Equal per section 01630
 - 1. Roof Panel Finish: Provide a full strength, 70% Kynar 500 Hylar 5000 fluoropolymer finish to roof panels.
 - 2. Color: As selected by the Architect. Color must have reflective index of 29 or more.
 - 3. The metal roofing materials must contain a minimum recycled content required by CHPS to qualify for MW.C2 credit.
- C. All metal roof related details shall be in accordance with manufacturers details and practices, the architectural drawings, and SMACNA (Sheet Metal and Air Conditioning Contractors National Association).

2.03 SHEET METAL ACCESSORIES

- A. Accessories (i.e., ventilators, skylights, gutter, fascia) shall be as standard with manufacturer, unless otherwise noted and furnished as specified.
- B. The metal coating on all accessories, gutters, downspouts, gable trim, and eaves trim to be a full strength, 70% Kynar 500 fluoropolymer coating. Color shall match roof panels.
- C. Location of standard accessories shall be as shown on erection drawings as furnished by manufacturer.
- D. Gutters: Formed from same material and finish as roof panels in sections not less than 8 feet in length, complete with end pieces, outlet tubes, and special pieces that may be required. Apply waterblock or butyl caulk before joining pieces together. Join sections with riveted and EPDM flashing membrane joints. Furnish gutter supports spaced 24" on center, constructed of 1/8" x 1" Aluminum bar. Unless otherwise indicated, provide expansion joint with cover plate every 40' or where indicated. Furnish gutter supports spaced at 24" o. c., constructed of the same metal as gutters. Provide standard bronze, copper, or aluminum, wire ball strainers at each outlet. Gutters shall be 6" ogee style. Finish matching roof fascia and rake. Gutter size and configuration shall be as indicated on drawings or approved by Owner.
- E. Downspouts: Formed in sections not less than 8 feet in length complete with any special pieces that may be required. Join sections with riveted and soldered or

sealed joints. Downspouts shall be same material and finish system as the roof panels. Finish color shall match fascia. Gutter straps shall be spaced 8' o. c. maximum and be same material as gutter. All strap edges shall be rolled or smooth. Size to match as shown on drawings.

- F. Roof Curbs: Manufacturer's standard roof curb units for roof-mounted equipment to be supplied and installed by others and painted to match roof finish. Roof curbs shall be aluminum, metal or stainless steel as design loads will allow and shall provide for a weathertight seal with standing seam roof system. Stainless steel crickets shall be provided on high side or curbs for proper drainage as an integral part of roof curb design. All curbs shall be seamed in place. Roofer will furnish/install roof curb and related curb top to match panel system where shown on drawings.
- G. Snow Guards: Provide snow guards ColorGard by S-5 at all eaves of metal roof.
1. Provide one (1) S-5-U-HD clamp at every rib and two (2) snow retention guards per panel at all roof panel runs (measured from ridge to gutter) of 50 feet or greater.
 2. Provide one (1) S-5-U-HD clamp at every other rib and one (1) snow retention guard per panel at all roof panel runs (measured from ridge to gutter) of less than 50 feet.
- H. Provide High Temperature "Ice and Water Guard/Shield" at all metal roof and wall panel areas including covering all fascia and perimeter edge wood. Provide one of the following: Carlisle "WIP 300" or Soprema "Lasto Bond Shield HT".

2.04 THERMAL INSULATION

- A. Rigid Insulation: 1 layer of 2.5" Polyiso insulation equaling 2.5" and an R value of 14.4. This insulation is to be added over the existing 3" nail board insulation. Secure 5/8" plywood sheathing to top layer of Polyiso staggered from layer below. Cover all plywood and wood with ice and water shield. Utilize mechanical fasteners when fasteners are not exposed to view on the underside of the decking if fasteners are exposed to view below use insulation adhesive.
- B. Insulation Adhesive: Two component, low rise polyurethane adhesive designed for anchoring insulation to metal deck. Adhesive shall contain no solvents, near zero VOC's and no harmful CHFC's or CFC's. Utilize adhesive fastening only when fasteners will be exposed to view on the underside of the decking.

PART 3 - EXECUTION**3.01 GENERAL**

- A. Metal roofing system shall be installed in strict conformance with manufacturer's instructions. Roof panels shall be installed to allow for relative movement between roof panels and ridge, gables, fascias, and other components of the roof system.

3.02 ROOFING AND SIDING

- A. General: Arrange and nest wall panel sidelap joints so that prevailing winds blow over, not into lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line. Samples submitted shall be used as basis for evaluating quality of work performed.
- B. Provide weatherseal under ridge cap/flash and seal roof panels at eaves and rake with rubber, neoprene, or other closures to exclude weather.
- C. Roof Sheets: Secure roof panels to structural by means of a sliding clip fastened to the structural and securely locked into panel seam. Sliding clip shall be centered in mounting clip.
 - 1. Panel seams shall be mechanically field seamed using manufacturer's standard machine seaming device. Cracking or splitting of metal or cracking, peeling, blistering or other damage to panel coating shall not be acceptable. Panels shall be securely fastened to eaves structural and sealed watertight.
 - 2. Panel and splices shall consist of prepunched and prenotched roof panels bolted together with a back-up plate or stiffener and sealed weathertight. End lap seams shall be tight and flat. "Fishmouthing" between fasteners is not acceptable.
- D. Wall sheets: Apply elastomeric sealant continuous between metal wall panels and concrete and elsewhere as necessary for waterproofing. Handle and apply sealant and back-up in accordance with sealant manufacturer's recommendations. Provide weatherseal at top and bottom of wall panels with rubber, neoprene or other closures to exclude weather.
 - 1. Align bottoms of wall panels and fasten panels with blind rivets, bolts, or self-tapping panel screws. Fasten flashings, trim around openings, etc., with self-tapping screws.

2. Install screw fasteners with power tool having controlled torque adjusted to compress neoprene washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes. Self-drilling screws shall not be used.
- E. Sheet Metal Accessories: Install gutters and other sheetmetal accessories in accordance with manufacturer's recommendations for positive anchorage to building and weathertight mounting.
- F. Snow Guards: Provide snow guards. Install in accordance with manufacturer's recommendations for positive anchorage to building and weathertight mounting.
- G. Thermal Insulation: Install concurrently with installation of roof panels, and in accordance with manufacturer's published directions.
- H. Dissimilar Materials: Where aluminum surfaces come in contact with ferrous metal or other incompatible materials, keep aluminum surfaces from direct contact by applications to the other material as follows:
 1. One coat of zinc chromate primer, FS TT-P-645, followed by two coats of aluminum paint, SSPC-Paint 101.
 2. In lieu of two coats of aluminum paint, apply one coat of high build bituminous paint, SSPC-Paint 12, applied to a thickness of 1/16" over zinc chromate primer.
- I. Backpaint aluminum surface, where impractical to paint other surface.

3.03 CLEAN UP

- A. Remove all excess materials, packaging, trash & other debris associated with the work of this section and dispose of legally offsite.

END OF SECTION

SECTION 07416
EXTERIOR WALL AND SOFFIT PANELS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specifications Sections, apply to the work of this section.

1.02 RELATED WORK:

- A. Section 05120 – Structural Steel
- B. Section 05500 – Metal Fabrications
- C. Section 06100 - Rough Carpentry
- D. Section 07600 - Flashing and Sheet Metal
- E. Section 07510 - 4-Ply Built-up Roofing with Gravel Ballast and Insulation
- F. Section 07900 - Sealants

1.03 DESCRIPTION OF WORK:

- A. This section covers the pre-finished, pre-fabricated Architectural metal wall/soffit panel system. All metal trim, accessories, fasteners, insulation and sealants indicated on the drawings as part of this section.
- B. Section Includes
 - 1. Factory formed metal/soffit wall panels.

1.04 DEFINITIONS

- A. Metal Wall Panel Assembly: Metal wall and soffit panels, attachment system components, miscellaneous metal framing, thermal, and accessories necessary for a complete weather tight system.

1.05 QUALITY ASSURANCE

- A. Manufacturer and erector shall demonstrate experience of a minimum of five (5) years in this type of project.
- B. Panels shall be factory-produced only. No portable, installer-owned or installer-rented machines will be permitted.
- C. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate - .032 or .040 and Aluminum

1.06 SUBSTITUTIONS

- A. The material, products and equipment specified in this section establish a standard for required function, dimension, appearance and quality to be met by any proposed substitution.
- B. Other pre-bid approved manufacturers complying with the requirements and the intent of this Section shall be acceptable; see Section 01630.

1.07 SYSTEM PERFORMANCE TESTING

- A. General Performance: Metal wall/soffit panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation or other defects in construction.
- B. Panels to meet:
 - 1. Wall System shall be designed to meet applicable Local Building Code and the Soffit System shall have been tested by the Manufacturer per ASTM E-330 and have the applicable Load Tables published from this Air Bag testing for negative loads.

1.08 SUBMITTALS

- A. Furnish detailed drawings showing profile and gauge of exterior sheets, location and type of fasteners, location, gauges, shape and method of attachment of all trim locations and types of sealants, and any other details as may be required for a weather-tight installation.
- B. Provide manufacturer's range of colors for selection by Architect.
- C. Shop drawings: Show fabrication, installation layouts and details of metal wall panels or metal soffit panels, details of edge conditions, panel profiles, corners, anchorages, trim, flashings, closures and accessories, and special details. Distinguish between factory and field-assembled work
- D. Coordination Drawings: Plans, drawn to scale, on which all adjacent items are shown and coordinated with each other, based on input from installer of the items involved.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Ordering: Comply with manufacturer's ordering instruction and lead time requirements to avoid construction delays.
- B. Deliver components, sheets, metal wall/soffit panels and other manufactured items so as not to be damaged or deformed. Package metal wall panels for protection during transportation and handling.

- C. Unload, store and erect metal wall panels in a manner to prevent bending, warping, twisting and surface damage.
- D. Stack metal wall/soffit panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal wall/soffit panels to ensure dryness. Do not store metal wall panels in contact with other materials that might cause staining, denting or other surface damage.
- E. Protect strippable protective coating on any metal coated product from exposure to sunlight and high humidity, except to the extent necessary for material installation.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: proceed with installation only when existing and forecasted weather conditions permit metal wall panel work to be performed.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

1.11 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim and construction of decks, parapet walls and other adjoining work to provide a leakproof, secure and noncorrosive installation.

1.12 WARRANTIES

- A. Provide a five (5) year written guarantee on installation for all exterior wall and soffit panel systems.
- B. Provide manufacturer's standard paint film written warranty for twenty (20) years against cracking, peeling, chalking, and fading of metal roof, soffit and wall panels.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Dimensional Metals Inc. Reynoldsburg, Oh. FP-1012 Flush Wall & Soffit Panel (www.dmimetals.com)
- B. Reynobond, Renolux as manufactured by Alcoa Cladding Systems, (www.alcoa.com)

- C. Flush Wall and Soffit panel as manufactured by Petersen Aluminum Corporation; www.pac-clad.com; 1-800-PAC-CLAD.
 - D. Pre-Bid approved manufacturer, see Section 01630.
- 2.02 PANEL DESIGN: TYPE 1 (1" HIGH FLUSH PANEL for Wall conditions, Soffit and Roof Equipment Screen.)
- A. Provide (2) evenly spaced "High BEAD" stiffening beads at soffit panel conditions.
 - B. Provide 1" reveal at wall conditions.
 - C. General: Provide factory-formed metal wall panels designed for exterior wall, soffit and fascia and equipment roof screen applications where a flush or flat appearance is desired. A round interlock leg and concealed fastening system act to improve the flush appearance while providing additional strength.
 - D. Wall panels shall be 1" Flush Panel in 12" coverage widths, unless noted otherwise. Provide "smooth" face on flush panels with widths less than 12".
 - E. Forming: Use continuous end rolling method. No end laps on panels. Portable rollforming machines will be permitted on this project. Installer-owned or installer rented machines will be permitted. Factory-Manufactured panel systems are also acceptable for this project.
- 2.03 PANEL DESIGN: WALL - TYPE 2 (Flat Profile "S" Lock)
- A. General: Provide contractor formed metal wall panels designed for exterior walls only where a flush or flat appearance is desired.
 - B. Provide Wall panels shall be 12" in coverage widths, unless noted otherwise.
 - C. Wall panels fabrication shall follow SMACNA (Architectural Sheet Metal Manual Seventh Edition) Figure 7-3 "Flat Profile".
 - D. Wall panels shall be fabricated of .032 thick 3105-H14 Aluminum.
 - E. Color to be selected by architect from manufacture's full range of standard colors.
- 2.04 PANEL DESIGN: WALL - TYPE 3
- A. General: Provide factory formed metal wall panels designed for exterior wall applications where a rib appearance is desired. An interlocking concealed engagement leg and fastening system is required.
 - B. Wall panels shall be smooth, with an angular ribbed appearance. Ribs will be spaced 4" OC with a depth of 7/8". Panel width is 16".

- C. Forming: Use continuous end rolling method. No portable rollforming machines will be permitted on this project, no installer-owned, or installer- rented machines will be permitted. It is the intent of the Architect to provide Factory manufactured panel systems only for this project.
- D. Acceptable Manufacturers:
Dimensional Metals Inc. Reynoldsburg Ohio: **HWP-16** (dmimetals.com)
- E. Pre-Bid approved manufacturer, see Section 01630.

2.05 PANEL DESIGN: WALL - TYPE 4

- A. General: Provide formed metal wall panels designed for exterior wall applications where a horizontal, lapped appearance is desired. An interlocking concealed engagement leg with clip attachment is required.
- B. Wall panels shall be smooth with staggered end laps, standard panel size will be 12"x 48" with staggered joints and a depth of 1" at the bottom panel edge.
- C. Acceptable Manufacturers:
Dimensional Metals Inc. Reynoldsburg, Oh. **Bermuda Shingle** (dmimetals.com)
- D. Pre-Bid approved manufacturer, see Section 01630.

2.06 MATERIALS AND FINISHES

- A. Preformed metal wall panels shall be fabricated of 3105-H14 aluminum.
 - 1. Preformed metal wall panels shall be fabricated of **[.032" thick or .040" thick]** aluminum.
- B. Preformed soffit panels shall be fabricated of .032" thick 3105-H14 aluminum.
- C. Color shall be selected by Architect from manufacturer's full range of standard colors.
- D. Finish shall be Kynar 500 or Hylar 5000 Fluorocarbon coating with a top side film thickness of 0.70 to 0.90 mil over a 0.25 to 0.3 mil prime coat to provide a total dry film thickness of 0.95 to 1.25 mil, to meet AAMA 2605 or 621. Bottom side shall be coated with a primer with a dry film thickness of 0.25 mil. Finish shall conform to all tests for adhesions, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier.
- E. If Strippable coating to be applied on the pre-finished panels to the top side to protect the finish during fabrication, shipping and handling, film shall be removed before installation.
- F. Trim: Trim shall be fabricated of the same material and finish to match the profile

and will be press broken in lengths of 10 to 12 feet. Trim shall be formed only by the manufacturer of their approved dealer. Trim to be erected in overlapped condition. Use lap strips only as indicated on drawings. Miter conditions shall be factory welded material to match the sheeting.

- G. Accessories/Fasteners: Fasteners shall be of type, material, size, corrosion resistance, holding power and other properties required to fasten miscellaneous framing members to substrates. Accessories and their fasteners shall be capable of resisting the specified design wind uplift forces and shall allow for thermal movement of the wall panel system. Exposed fasteners shall not restrict free movement of the roof panel system resulting from thermal forces, except at designed points of roof panel fixity
- H. Underlayment: All surfaces to be covered with metal wall panels, shall be covered with Liquid Applied Air Barrier per Section 07265. Apply transition membrane as recommended by manufacturer.
- I. Sealants:
 - 1. Provide two-part polysulfide class B non-sag type for vertical and horizontal joints or
 - 2. One part polysulfide not containing pitch or phenolic extenders or
 - 3. Exterior grade silicone sealant recommended by roofing manufacturer or
 - 4. One part non-sag, gun grade exterior type polyurethane recommended by the roofing manufacturer.
- I. All surfaces to be covered with metal wall panels shall be covered with liquid applied air barrier per section 07265 or HT Ice and water shield following plans and specifications.
- J. Provide High Temperature "Ice and Water Guard" at all metal roof and wall panel areas including covering all fascia and perimeter edge wood. Provide one of the following: Carlisle "WIP 300" or Soprema "Lasto Bond Shield HT".

2.06 FABRICATION

- A. Comply with dimensions, profile limitations, gauges and fabrication details shown and if not shown, provide manufacturer's standard product fabrication.
- B. Fabricate components of the system in factory, ready for field assembly.
- C. Fabricate components and assemble units to comply with fire performance requirements specified.

- D. Apply specified finishes in conformance with manufacturer's standard, and according to manufacturer's instructions.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine alignment of structural steel and related supports, primary and secondary roof framing, solid roof sheathing, prior to installation.
- B. For the record, prepare written report, endorsed by installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 FASTENERS

- A. Secure units to supports.
- B. Place fasteners as indicated in manufacturer's standards.

3.03 INSTALLATION

- A. Compliance: Comply with manufacturer's product data, recommendations and installation instructions for substrate verification, preparation requirements and installation.
- B. Panels shall be installed plumb and true in a proper alignment and in relation to the structural framing. The erector must have at least five years successful experience with similar applications.
- C. Install metal panels, fasteners, trim and related sealants in accordance with approved shop drawings and as may be required for a weather-tight installation.
- D. Provide uniform, neat seams.
- E. Fasteners: Conceal fasteners where possible in exposed work. Cover and seal fasteners and anchors for watertight and leak proof installation.
- F. Remove all strippable coating and provide a dry-wipe down cleaning of the panels as they are erected.

3.04 DAMAGED MATERIAL

- A. Upon determination of responsibility, repair or replace damaged metal panels and trim to the satisfaction of the Architect and Owner.

3.05 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damage installed products. Clean installed products in accordance with manufacturer's instruction prior to owners acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

SECTION 07510

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. See Roof Plans and Details
- B. Section 07600-Flashing and Sheet Metal

1.03 DESCRIPTION OF WORK

- A. Extent of built-up roofing system work is indicated on drawings and by provisions of this section and is defined to include roofing membrane, insulation flashing and stripping and roofing accessories integrally related to roof installation.
- B. The work consists of new built-up roofing over new decks or over existing decks where tear-off of all or partial existing layers of membrane, insulation and flashings shall be performed. Refer to drawings for scope of work and field verify all existing conditions. Any repairs or replacement to existing decking, wood blocking or other parts of the building structure will be done as directed by a Fairfax County Public Schools (FCPS) inspector on a time and material basis.

1.04 QUALITY ASSURANCE

- A. Single Source Manufacturer: Provide primary products, including each type of roofing sheet (felt), bitumen, insulations, composition flashings, produced by a single manufacturer. Provide secondary products only as recommended by manufacturer of primary products for use with roofing system specified.
- B. Installer Qualifications: A single Installer ("Roofer") shall perform the work of this section; and shall be a firm with not less than ten (10) years of successful experience in installation of built-up roofing systems similar to those required for this project. The roofer shall be a certified installer for the approved roofing system. The Roofer must have an office, warehouse with supplies, and permanent roofing crews within a 50-mile radius of the City of Fairfax, Virginia. Roofer shall have had Soprema, Elevate "Red Shield", GAF Master Select or Johns Manville approval in this area for at least eight (8) years from manufacturer, and shall perform a minimum of five (5) of these built-up roofing manufacturer guarantees per year.
- C. Pre-Roofing Conference: As soon as possible after award of built-up roofing work, contractor shall schedule and attend a meeting with Roofer, Manufacturer's

Representative, installers of substrate construction (decks) and other work adjoining roof system, including penetrating work and roof-top units; Architect, Owner, and representatives of other entities directly concerned with performance of roofing system. Review requirements of Contract Documents, submittals, status of coordinating work, availability of materials and installation facilities and proposed installation schedule, requirements for inspections, testing, certifications, forecasted weather conditions, governing regulations, insurance requirements, and proposed installation procedures.

- D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.
- E. UL Listing:
 - 1. Provide built-up roofing system and component materials which have been tested for application and slopes indicated on Drawings and are listed by Underwriters Laboratories, Inc. (UL) for Class A external fire exposure.
 - 2. Provide roof covering materials bearing Classification Marking (UL) on bundle, package or container indicating that materials have been produced under UL's Classification and Follow-up Service.
- F. Product and Application Guides: Soprema, Johns Manville, Elevate or GAF manufacturer's "Roofing Manual for Commercial/Industrial Roofing Solutions."

1.05 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data, installation instructions and recommendations for each type of roofing product required. Include data substantiating that materials comply with requirements.
 - 1. For asphalt bitumen: provide label on each container or certification with each load of bulk bitumen, indicating flash point (FP), finished blowing temperature (FBT), softening point (SP) and equiviscous temperature (EVT).
 - 2. Expansion Joints: Follow FCPS specified details.
- B. Shop Drawings: Submit shop drawings showing plan layouts of all roofing assembly types, materials, roof top equipment, tapered insulation, crickets and drains. For additional information and requirements see section 01340.
- C. Samples, Built-Up Roofing System: Submit 2-pound samples of aggregate surfacing material.

1.06 JOB CONDITIONS

- A. Weather Condition Limitations: Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

1.07 DELIVERY, STORAGE AND PRODUCT HANDLING

- A. Deliver specified materials and accessories in unopened rolls, containers and packaging with manufacturer's original labels intact bearing name, source of product and delivery, storage date of manufacture. Cover all materials with waterproof tarps or two layers of plastic. Original material covering is not accepted as a single covering.
- B. Store and handle roofing felts in a manner that will ensure that there is no possibility of significant moisture pick-up.
- C. Store in a dry, well ventilated, weather-tight place. Unless protected from weather or other moisture sources, do not leave unused felts on the roof overnight or when roofing work is not in progress. Store rolls of felt and other sheet materials on end, on pallets or other raised surface. Handle and store materials or equipment in a manner to avoid significant or permanent deflection of deck. Materials that are found to have been exposed to moisture-related weather will be marked or designated as deficient and must be removed and not used on any FCPS project.
- D. Stockpiles of aggregate on roof surface shall only be set on areas which have been coated with asphalt, in order to protect the underlying membrane.
- E. Roof Loading: Do not store materials on roof decks or position installation equipment on roof decks in concentrations or locations exceeding design live loading for structural roof system.
- F. All roofing materials shall be covered with weatherproof tarps or two layers of plastic.

1.08 WARRANTIES

- A. Manufacturer's Guarantee (Project): Submit three (3) executed copies of full 20 year "NDL" (no dollar limit) "Manufacturer's Roofing Guarantee" on form approved by Owner, covering work of this section to include roofing membrane, composition flashing, roof insulation, and roofing accessories.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

- A. Insurance and Code Requirements: Provide materials complying with governing regulations and which can be installed to comply with the following:
1. Underwriters Laboratories "Fire Classified" and "Class 90" wind uplift resistance.

2.02 ROOF INSULATION

A. TYPE 1 New Construction and Complete Tear Off Of All Existing Roofing:

1. Polyisocyanurate Insulation (Bottom Layer): 2 layers of 2.5" both layers staggered in all directions," Rigid, closed cell polyisocyanurate foam, faced with a fiberglass, reinforced mat. Meets requirements of ASTM C1289-02, Type II, Class 1, Grade 2. R value: 6.0/inch over the expected life of the insulation. Thickness: Total thickness: 5" R-value of 28.8 (LTTR).
2. ½ " Fiberboard or Perlite (Top Layer), with R-value of 1.32, and shall comply with ASTM C728.

B. TYPE 2 Partial Tear Off Of Existing Roof Where Existing Insulation is to remain:

1. Polyisocyanurate Insulation – 1 layer of 2.8" (R-Value 16.2) (staggering all joints over the existing insulation) to be mechanically attached to the existing layers of insulation, Rigid, closed cell polyisocyanurate foam, faced with a fiberglass, reinforced mat. Meets requirements of ASTM C 1289-02, Type II, Class 1, Grade 2. R-Value: 6.0/inch over the expected life of the insulation. Thickness: Total to meet minimum R value of 28.72 (LTTR).
2. ½ " Fiberboard or Perlite (Top Layer), with R value of 1.32, and shall comply with ASTM C728.

C. TYPE 3 Partial Tear Off Of Existing Roof Where Existing Insulation is to remain:

1. 1 layer of ½" Fiberboard or ½" Perlite (staggering at joints over the existing insulation) to be mechanically attached through the existing insulation to the deck.
2. 1 layer of ½" Fiberboard or ½" Perlite (staggering at joints over the previous layer of ½" fireboard) set in a full mapping of Type III asphalt.

D. TYPE 4 Partial Tear Off Of Existing Roof Where Existing Insulation and Cap Sheet is to remain:

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION SECTION 07510

1. Polyisocyanurate Insulation- 1 layer of 2.8" (R-Value 16.2) (staggered at joints over the prime coated existing insulation) set in a full mopping of hot asphalt, rigid, closed cell polyisocyanurate foam, faced with a fiberglass, reinforced mat. Meets requirements of ASTM C 1289-02, Type II, Class1, Grade 2. R Value: 6.0 /inch over the expected life of the insulation. Thickness: Total to meet minimum R value of 28.72 (LTTR).
 2. ½" Fiberboard or Perlite (Top Layer) with R value of 1.32, and shall comply with ASTM C 728.
- E. Tapered polyisocyanurate or tapered perlite panels roof insulation for slopes, tapered edge strips, and crickets.

2.03 BUILT-UP ROOF MEMBRANE SYSTEM

- A. Insulated-Deck Asphalt/Glass-Fiber/Aggregate Roofing: Provide built-up aggregate-surfaced roof system with asphalt bitumen and 4 plies of glass fiber felts for lay-up as indicated.
1. Primer: Asphalt cutback primer complying with ASTM D41.
 2. Ply Felts: 4 plies of asphalt-impregnated glass-fiber felts, Type 4 of Firestone, Soprema, GAF or Johns Manville ASTM D2178.
 3. Bitumen: Roofing asphalt, complying with ASTM D312, Type III."Low Odor"/"Low Fume Only"
 4. Paint all base flashing seams: Firestone – 1 coat base and 1 coat top
 - a. Elevate – 1 coat base and 1 coat top
 - b. Soprema – Alsan Finish
 - c. GAF-1 coat Unibase Primer and 1 coat Roof Mate top coat.
 - d. JohnsManville – 1 coast base and 1 coat top.
 5. Broom all felts
- B. Comply with NRCA Roofing and Waterproofing Manual, 5th edition, Specification Plate #BU-4-I-A-A or latest edition, Diagram B; except 4 plies.
- C. Products: Subject to compliance with requirements, provide the following BUR System: NO SUBSTITUTIONS ALLOWED!
1. Soprema
 2. Elevate
 3. GAF
 4. Johns Manville
- D. Base Flashings

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION SECTION 07510

1. Elevate- 1 ply SBS Premium base mopped only and 1 ply Ultra White Granual SBS FR torched or mopped.
 2. Soprema- 1 ply Sopralene Sandes PS mopped only and 1 ply SopraStar GR Flame torched or mopped.
 3. GAF- 1 ply rubberoid mop smooth 1.5 and 1 ply Siplast Parafor 30 BW.
 4. Johns Manville- 1 ply Dyna Base PR and 1 ply Dyna Glas FR CR G.
- E. Strippling Piles: For gravel stops, vent pipe flashings, pitch pockets, and "B" vent type flashing install 2 plies type 4 felt set in hot asphalt. At gravel stop/drip edge flashing install 1 ply SBS Ultra White gravels. For Elevate, 1 ply Sopra Star white for Soprema , 1 ply Johns Manville Dyna Glas FR CR G and for GAT 1 ply Siplast Parafor 30 BW.
- F. Liquid Flashing: For pipe penetration, drains, gravel stops, and any area liquid flashing is need for manufacture's warranty.
1. Elevate- UltraFlash 1 and 2 Part.
 2. Johns Manville- PermaFlash 1 and 2 Part.
 3. Soprema- 1 Part Alsan and 2 Part Alsan RS.
 4. GAF- Siplast Parapro Flashing.

2.04 BUR EDGE/PENETRATION MATERIALS (As recommended by manufacturer)

- A. Roofing Cement: Asphaltic cement; comply with ASTM D4586, (non-asbestos containing).
- B. Glass Fiber Fabric: 1.5-pound minimum sheet of woven glass fiber, impregnated with asphalt (ASTM D 1668).
- C. Lead Flashing: 4-pound sheet of common desilverized pig lead. All sides primed that come in contact with built-up roofing.
- D. Preformed Edge Strips: Rigid insulation units matching roof insulation, or asphalt-impregnated organic fiber insulation units, molded to form 3-1/2" x 3-1/2" x 45 deg cant strips and 1-5/8" x 18" tapered edge strips, as shown to receive roofing ply-sheet courses and lift edges above main roofing surfaces. (Set in asphalt.)
- E. Cant strips: Fiber or perlite (Set in asphalt.)

2.05 SHEET METAL ACCESSORY MATERIALS

- A. Stainless Steel: ASTM A 167, AISI 302/304, No. 2D finish, temper as required for forming and performance; 0.015" thick (28 gage), except as otherwise indicated.

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION SECTION 07510

- B. Copper: ASTM B 370, cold-rolled unless soft temper required for forming and performance; 16-ounce (0.0216" thick), except as otherwise indicated.
- C. Aluminum: ASTM B 209, alloy 3003, temper H 14 unless harder temper required for forming and performance, with "Kynar" fluorocarbon enamel finish; 0.032" thick (20 gauge), except as otherwise indicated. Color as selected by Architect.
- D. Solder for Sheet Metal: Except as otherwise indicated or recommended by metal manufacturer, provide 50/50 tin/lead type (ASTM B32) for tinning and soldering joints; use rosin flux. All joints shall be soldered.
 - 1. Solder stainless steel joints with 60/40 tin/lead type solder; use acid-chloride flux, except use rosin flux on tinned surfaces.

2.06 ROOF DRAINS (THIS SECTION TO BE REMOVED BY EDIT FOR OTHER THAN ROOFING ONLY JOBS)

- A. Josam, J.R. Smith, Wade, or Zurn Equipment matching existing pipe size to be approved by FCPS (as indicated on drawings).
 - 1. All roof drains assemblies shall be removed and replaced with new Josam, J.R. Smith, Wade, or Zurn. Replacement drains shall be large bowls with new drain deck pans.
 - 2. Provide new 1" hard wrap insulation at drain bowls sealed to decking. Replace any pipe insulation that has been removed for drain replacement.

2.07 MISCELLANEOUS MATERIALS

- A. Surfacing Aggregate: Crushed stone, free of sharp edges and complying with ASTM D 1863. Color: White. Texas #7- NO SUBSTITUTIONS
- B. Wood Members: Provide wood pressure treated with water-borne preservatives for above-ground use, complying with AWPB LP-2 as indicated on drawings.
- C. Provide High Temperature "Ice and Water Guard" at all metal roof and wall panel areas including covering all fascia and perimeter edge wood. Provide one of the following: Carlisle "WIP 300" or Soprema "Lasto Bond Shield HT".
- D. Mastic Sealant: Polysio-butylene (plain or bituminous modified), non-hardening, nonmigrating, nonskinning and nondrying.
- E. Asphaltic Primer: Comply with ASTM D 41.
- F. Mechanical Fasteners: To comply with FM approval Guide 1-28 for I-90 classification; provide industry-standard types of mechanical fasteners for BUR system work, tested by manufacturer for required pull-out strength where applicable and compatible with deck type and roofing products used. Provide

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION SECTION 07510

either 1" diameter nail heads or 1-3/8" diameter x 30-gage sheet metal caps for nails used to secure felts or insulation boards of roofing system.

1. Metal Decks: Soprema Fastening System, Elevate, or GAF approved equal. Note: Where acoustical deck is used, fasteners shall not protrude below the bottom of the rib profile. Should this occur, the protruding portion of the fastener shall be cut.
 2. Gypsum Concrete Decks: Soprema, Elevate, GAF, or Johns Manville Specialty Systems.
- G. Vapor Retarders: (Acoustical Deck): Provide self adhering "Blueskin PE 200 HT" vapor retarding, high temperature roof underlayment by Henry Company, 800-486-1278. Vapor retarding underlayment shall be 40 mils thick, SBS rubberized asphalt compound laminated to a non-slip coated, polyethylene film top layer and a silconizes kraft paper bottom layer.
- H. Expansion Joints: Install new expansion joints and replace existing expansion joints at locations shown on the drawings in details as indicated.

2.08 FABRICATION OF SHEET METAL ACCESSORIES

- A. SMACNA and NRCA Details: Work shall conform with details shown, and with applicable fabrication requirements of "Architectural Sheet Metal Manual" by SMACNA. Comply with installation details of "Roofing and Waterproofing Manual" by NRCA.
- B. Provide 4" wide flanges for all accessories for setting on BUR membrane with concealment by composition stripping.
- C. Fabricate work with flat-lock soldered joints and seams; except where joint movement is necessary provide 1" deep interlocking hooked flanges, filled with mastic sealant.
- D. Fabricate penetration sleeves with minimum 8" high stack of diameter 1" larger than penetrating element. Counter flashing is specified as work of Section 07600, Flashing and Sheet Metal.
- E. All metal copings shall have standing seam joints (per manufacturer's recommendation).
- F. All masonry associated counterflashing will use existing through wall assembly or provide new through wall assembly per the plans and specifications.

PART 3 - EXECUTION

3.01 INSPECTION OF SUBSTRATE

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION SECTION 07510

- A. Examine substrate surfaces to receive roofing system and associated work and conditions under which roofing will be installed. For re-roofing projects, examine existing conditions (such as deck substrate, edge construction, curb openings and other roof penetrations) and verify that such conditions will allow proper installation of the roof membrane assembly. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to Installer and complying with manufacturer's standards. Existing decking will be cleaned completely of all debris including deck flutes.
- B. Final determination of existing conditions will be that of FCPS Design and Construction. Any repair or replacement of existing structure will be directed by FCPS inspector on a time and material basis.
 - 1. Verify that flatness and fastening of metal roof decks comply with the following:
 - a. Top Flanges: No concavity or convexity in excess of 1/16" across any 3 adjacent flanges.
 - b. Side Laps: Minimum 2" laps located over and fastened to supports.
 - c. Deck secured to each supporting member in every other rib (maximum spacing of 12" o. c.) with puddle welds or approved mechanical fasteners.
 - 2. Deck infiller replacement shall follow FCPS specification details.

3.02 GENERAL INSTALLATION REQUIREMENTS

- A. Comply with manufacturer's published specifications for ply lapping, asphalt application, fastener recommendations, roof edge details and base flashing details. NOTE: FCPS specifications may supersede the minimum manufacturer requirement.
- B. Cooperate with inspection and test agencies engaged or required to perform services in connection with BUR system installation.
- C. Protect other work from spillage of BUR materials and prevent liquid materials from entering or clogging drains and conductors. Replace and restore other work damaged by installation of BUR system work.
- D. Insurance/Code Compliance: Install BUR system for (and test where required to show) compliance with governing regulations and with the insurance requirements of this Section.
- E. Coordinate the installation of insulation, roofing felts flashings, stripping, coatings and surfacings, so that insulation and felts are not exposed to precipitation nor exposed overnight. Provide cut-offs at end of each day's work, to cover exposed felts and insulation with a course of coated felt with joints and edges sealed with

roofing cement. Remove cut-offs immediately before resuming work. No phasing of roofing will be accepted unless approved by FCPS.

- F. Asphalt Bitumen Heating: Heat and apply bitumen in accordance with Equiviscous Temperature Method ("EVT Method") as recommended by NRCA. Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT ("25 degrees F or 14 degrees C, at point of application) more than one hour prior to time of application. Discard bitumen that has been held at temperature exceeding Finished Blowing Temperature (FBT) for a period exceeding 3 hours. Determine flash point, FBT and EVT of bitumen, either by information from bitumen producer or by suitable tests, and determine maximum fire-safe handling temperature and do not exceed temperature in heating bitumen. In no case shall bitumen be heated to a temperature higher than 25 degrees F (14 degrees C) below flash point. For aggregate-surfaced pour coats of bitumen, limit application temperature to minimum required for proper embedment of aggregate, and maximum which will permit retention of a coating of weight required, depending upon slope of surface. Tankers only will be used on all FCPS roof projects.
- G. Bitumen Mopping Weights: For interply mopping and for other moppings except as otherwise indicated, apply bitumen at the following rate:
- Asphalt: 25-lbs. of asphalt (25% on a total-job average basis) per roof square (100 square feet) between plies, but not less than 23 pounds per square per ply, applied within the EVT range.
- H. Substrate Joint Penetrations: Do not allow bitumen to penetrate substrate joints and enter building or damage insulation, vapor barrier (retarders) or other construction. Where steep asphalt is applied directly to a substrate, hold mopping back 2" from both sides of each joint.
- I. Cut-Offs: At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering of 2 plies of No. 15 roofing felt set in full moppings of hot bitumen; remove at beginning of next day's work. Do not glaze coat ply sheets in the interim before surfacing.
- J. Cold Weather Application: Fully comply with manufacturer's written guidelines for cold weather roof installation when work shall be performed in temperatures below 45°F.
- K. Newly installed roofing that is left unsurfaced for a period of time that will exceed that of what is recommended by the manufacturer will be coated with asphalt at a rate that is recommended by that manufacturer.
- L. At all times provide an odor eliminator additive – use "desent" by Arrmaz Custom Chemicals or approved equal.
- M. For roof replacement remove loose gravel by power vacuuming only.

3.03 VAPOR BARRIER APPLICATION/ACOUSTICAL DECK INSTALLATIONS (GYMNASIUM)

- A. Install preformed sound absorbing glass fiber insulation strips supplied under Section 05230, in acoustical wide rib deck flutes. Install in accordance with deck manufacturer's instructions.
- B. Prior to commencing installation, ambient and deck surface temperature shall be not less than 40 degrees and rising.
- C. Install self adhering single layer vapor retarding underlayment in shingle fashion parallel to metal deck flutes in accordance with manufacturers written instructions. All edges (sides and end laps) shall be lapped not less than 2 ½" and sealed with manufacturers recommended sealing compound.
- D. Extend vapor retarder under cant strips and blocking. Lap flexible flashing over vapor retarder or wall construction to provide continuity of vapor barrier envelope.
- E. Vapor retarding underlayment shall be fully covered by roofing system within six weeks of installation. Exposed underlayment shall be protected from foot and equipment traffic as recommended by manufacturer.

3.04 INSTALLATION OF INSULATION

- A. General: Comply with insulation manufacturer's instructions and recommendations for the handling, installation and bonding or anchorage of insulation to substrate.
- B. Secure insulation: to deck using mechanical fasteners specifically designed and sized for attachment of specified board type insulation to deck type shown. Fasten all layers of insulation over entire area of roofing at spacing as required by manufacturer.
- C. Three-Layer Installation: Install required thickness in three layers with joints of second layer staggered from joints of first layer a minimum of 12" each direction.
- D. Mecanically attach the first two layers together. Install third layer staggered from the second layer in full mopping of hot Type III asphalt, applied within temperature range of EVT " 25°F (14°C) and at average rate of 25 pounds. ("25% on total-job basis) per 100 square foot.
- E. Tapered insulation will be installed at all roof drains, crickets, tapered areas and on the high sides of all units as per the drawings and specifications.
- F. Tapered Insulation: Installation shall be as recommended by manufacturer.
- G. Install one-ply of #15 lb. felt laid in dry at all walls, roof edges and penetrations prior to installing roofing plies. #15 felt should be set under 1st layer of new insulation.

- H. Insulation required inside roof curbs shall match the R-value and thickness of the surrounding roof area.

3.05 ROOF MEMBRANE INSTALLATION

- A. Shingling of Plies: Except as otherwise indicated, install membrane with ply sheets shingled uniformly to achieve required number of thickness of membranes throughout. Shingle in proper direction to shed water on each large area of roofing. Drainage flow shall be over or parallel to, but not against the lap. Lightly broom felts as directed on all roofing plies. **GLAZE COAT PLIES IF SURFACE IS NOT INSTALLED WITHIN 60 DAYS.**
- B. Cant Strips/Tapered Edge Strips: Except as otherwise shown, install preformed 45° insulation cant strips at junctures of BUR membrane with vertical surface. Provide preformed tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces. Set all edge strips and cant strips in hot asphalt.
- C. Inter-Ply Felts: Provide the number and type(s) of felts indicated, lapped (shingled) as required to form a continuous, uniform membrane with bitumen moppings between sheets so that ply sheet does not touch ply sheet. Except as otherwise indicated, glaze-coat top of ply-sheet membrane with 10-pound mopping of same bitumen, integrally with operation of laying up membrane.
1. Mop base directly to substrate.
 2. Extend BUR membrane to 2" (nominal) above top edge of cant strip, solidly adhered, without bridging or buckling.
 3. Provide a folded-back envelope at edges and penetrations of BUR membrane where it is not turned up on a tapered strip, so as to provide positive protection against flow of bitumen into building or off the edge. Extend base sheet to form envelope or, where no base sheet is provided, install one ply or coated felt set in steep asphalt with joints sealed. Seal corners and other interruptions of envelope with large beads of roofing cement to provide positive protection against flow of bitumen.
 4. Nail edges of roofing membrane to wood blocking at perimeter edges of roof prior to installing metal gravel stops/fascias. Space recommended fasteners at minimum 6" o. c. with staggered rows through one-inch (1") diameter metal discs, unless otherwise noted.
- D. Set-on Accessories: Where small roof accessories are set on BUR membrane, set metal flanges in a bed of roofing cement, and seal penetration of membrane with bead of roofing cement to prevent flow of bitumen from membrane.
- E. Roof Drains: All roof drains shall have a tapered insulation sump area consisting of a minimum 12' x 12' total area. The sump shall be a minimum of 6' in each direction from the center of the roof drain. Sump area may need to be larger depending on the thickness of new insulation. Insulation should have a gradual

slope to drain not to exceed $\frac{3}{4}$ " per foot or approved by FCPS. Fill clamping ring base with a heavy coat of roofing cement. Set lead flashing sheet in a bed of roofing cement over completed ply sheet course. Lead sheet shall be primed with asphalt primer, clamped in roof drain ring, and extended a minimum of 24" onto the roof. Cover lead sheet with two plies of Type 4 felt. Finish by covering the entire sump area with SBS White Modified Bitumen sheet specified under the base flashing section, extending a minimum of 6" out onto the roofing field.

1. Lead flashing sheet: Minimum 30" x 30" in size.
- F. Allow for Expansion: of running metal flashing and edge trim that adjoins roofing. Do not seal or bond BUR membrane or composition flashing and stripping to metal flanges over 3'-0" in length.
- G. Flashings: Two-ply flashings shall not be applied until the roof membrane (excluding surfacing) has been installed. Provide a temporary seal at ply terminations until flashing can be installed.
1. Prime masonry surfaces and wood cant and expansion joint with recommended asphalt primer at the rate of one (1) gallon per 100 square feet.
 2. Apply asphaltic primer to all sheet metal that shall come into contact with bituminous materials (top and bottom).
 3. Embed flashings into a solid mopping of steep asphalt extending at least eight inches (8") up the curb or wall, and extending at least four inches (4") beyond the cant strip onto the roof.
 4. Seal all nail heads, inside and outside corners with roof cement. Provide a three- (3) course seal using glass fabric embedded into and covered with roofing cement under all surface-mounted counter flashing.
 5. Cover all wood blocking/plywood not covered by the B/U/R with ice/wwater shield.
- H. Counter Flashings: Counter flashings, cap flashings, expansion joints, through wall receiver metal are "all" stainless steel and "all" similar metal work to be coordinated and will become part of the BUR work.
- I. Roof Accessories: Miscellaneous sheet metal accessory items, including, and major items of accessories to be coordinated with BUR work, are specified in other sections of these specifications.
1. Sheet metal flashing flanges and through wall shall have all seams (base and up seams) soldered. Prime coat all parts that come into contact with roofing membrane. Set in bed of roofing cement prior to concealment by composition stripping.

J. Aggregate Surfacing: Promptly after completion of BUR membrane, edge treatment and set-on accessories in each substantial area of roofing, flood-coat surface as indicated and while each small area is hot and fluid, cast the following approximate weight of aggregate in a uniform course. NOTE: ALL AREAS THAT SHALL RECEIVE AGGREGATE SHALL BE INSPECTED BY OWNER'S REPRESENTATIVE AND ROOFING MANUFACTURER'S REPRESENTATIVE PRIOR TO INSTALLING AGGREGATE.

1. Flood Coat: 60 pounds per square into hot steep asphalt.

2. Aggregate: Texas #7 White Stone ONLY! No Substitutions

Roof surface shall be clean, free of dirt, dust, and moisture prior to applying aggregate. Install aggregate so that at least 50% of the aggregate is solidly adhered in the asphalt.

K. Do not install flood coating of bitumen and aggregate surface source at edges of roofing until composition flashing and stripping work has been completed. Glaze-coat ply sheet courses where surfacing cannot be installed on the same day. Delay aggregate surfacing only as long as necessary to substantially complete edge work and tests where required.

L. Allow 5% of extra asphalt and stone for ponded water areas.

3.06 CORRECTION OF DEFECTIVE OR DAMAGED WORK

A. Owner reserves the right to direct that roof cuts (samples) be taken in any area of the work whenever defective work is suspected. Owner's Representative will notify Contractor and Roofing Manufacturer's Representative, when such action is deemed necessary in the opinion of the Owner.

B. "Fishmouths" (non-adhered arched ply edges). Cut out plies which are not properly embedded in bitumen; replace the cut area with the minimum number of plies specified for the roofing system, plus one (1) additional ply using the "feather out" method recommended by the Manufacturer for cut-out repair. Embed each ply in a solid, uniform 23 to 35 pounds per square mopping of hot bitumen. No dry laps shall be permitted. Feather felts 2" over preceding layers.

C. Physical damage resulting from construction activity: Cut out damaged plies and insulation. Install new insulation and repair the cutout in accordance with the procedures outlined in paragraph A above.

D. Non-adhered laps: Secure laps by embedding each ply in a solid, uniform 23 to 35 pounds per square mopping of hot bitumen.

E. Other defective or non complying work discovered as a result of Manufacturer's audit for guaranty requirements shall be corrected in accordance with manufacturer's recommended procedures for each type of defect encountered.

4-PLY BUILT-UP ROOFING WITH GRAVEL BALLAST AND INSULATION SECTION 07510

3.07 CLEANING

- A. Remove excess materials, equipment, trash and debris associated with the roofing activities from the project area and dispose of legally.
- B. Repair damage to adjacent work of other trades which has resulted from roofing activities; remove stains and drippage resulting from bitumen application.

3.08 PROTECTION OF ROOFING

- A. Upon completion of roofing work, including associated work, Roofer shall advise Contractor of recommended procedures for surveillance and protection of roofing during remainder of construction period. At end of Construction period, or at Contractor's option, at a time when remaining construction work will in no way affect or endanger roofing, Roofer shall make a final inspection of roofing and prepare a written report, directed to Contractor with copy to Owner describing nature and extent of deterioration of damage found in the work.
- B. Roofer shall repair or replace deteriorated or defective work found at time of final inspection. Roofer shall be engaged by Contractor to repair damages to roofing that occurred subsequent to roofing installation and prior to final inspection. Repair or replace the roofing and associated work to a condition free of damage and deterioration at time of substantial completion.
- C. Repair all damaged side walks, grounds and all other damaged surfaces to match existing.

END OF SECTION

SECTION 07513

ROOF DRAIN MAINTENANCE MARKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 REFERENCE STANDARDS

- A. ASTM B 209 (ASTM B 209M) – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- B. ASTM B 221 (ASTM B 221M) – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. ASTM D 256 – Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
- D. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- E. ASTM F 593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

1.03 RELATED WORK

- A. Section 07510: 4-Ply Built-Up Roofing with Gravel Ballast and Insulation
- B. Section 07530: TPO Single-Ply Membrane Roofing (Canopies)

1.04 SUBMITTALS

- A. Product Data: For roof drain markers, including:
 - 1. Standard drawings illustrating product dimensions.
 - 2. Installation instructions and recommendations.
- B. Samples for Verification: For each product specified.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Roof Drain Marker Co., LLC., West Bridgewater, MA; (877) 571-6644; email: lmay@roofdrainmarker.com, www.roofdrainmarker.com. (Basis of Specification).

- B. Other manufacturers, pre-bid approved in accordance with Section 01630, shall be acceptable.

2.02 ROOF DRAIN MARKER

- A. Roof Drain Marker: Roof drain mounted vertical fiberglass flag marker secured in aluminum socket with a pre-punched aluminum bracket configured for through-bolting to roof-drain dome.
 - 1. Flag Marker Protruded fiber-reinforced polymer rod, 1/2 inch (12 mm) diameter by 48 inch (1219 mm) long, with reflective dual-colored reversible ends enabling marking of selected drains.
 - a. Flexural Strength, minimum ASTM D 790, 700,000 psi (689 MPa).
 - b. Impact Strength, minimum, ASTM D 256; 40 ft-lb/in.
 - c. Color: White rod with silver reflective strip 3" down from the top.
 - 2. Marker Base: 1 by 1 by 4 inch (25 by 25 by 102 mm) extruded aluminum bar, ASTM B 209 (ASTM B 209M), with milled flag receiver, threaded flag set screw retainer, and threaded base.
 - 3. Flag Bracket: 1 by 11 by 0.063 inch (25 by 25 by 160 mm) aluminum plate bracket, ASTM B 221 (ASTM B 221M).
 - 4. Fasteners: Alloy Group 2 (A4) stainless-steel bolts, ASTM F 593 (ASTM F 738M), and nuts, ASTM F 594 (ASTM F 836M).

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine roof drain dome conditions to verify secure attachment to drain base and compatible alignment with roof drain marker mounting bracket.

3.02 ROOF DRAIN MARKER INSTALLATION

- A. Install roof drain markers on each roof drain dome in roof area indicated. Install in accordance with manufacturer's instructions.
 - 1. Attach bracket to drain dome using manufacturer-furnished corrosion-resistant fastener, securely tightened.
 - 2. Thread marker bases to threaded stud on marker bracket and tighten securely.
 - 3. Insert flag marker into marker base and secure using set screw.

END OF SECTION

SECTION 07530

TPO SINGLE-PLY MEMBRANE ROOFING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 SUMMARY

- A. This Section includes the following (Edit per project requirements):

1. Adhered single-ply sheet roofing.
2. Polyiso roof insulation.

- B. RELATED WORK

1. Section 06100: Rough Carpentry
2. Section 07600: Flashing and Sheet Metal
3. Section 07900: Sealants

1.03 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 for definition of terms related to roofing work not otherwise defined in this Section.

1.04 SUBMITTALS

- A. Product Data: For each type of roofing product specified. Include data substantiating that materials comply with requirements.

- B. Shop Drawings:

1. Include plans, sections and details.
2. Base flashings and membrane terminations.
3. Tapered insulation, including slopes.

- C. Samples for Verification: Of the following products:

1. Manufacturer's standard sample of sheet roofing.

2. Manufacturer's standard sample of roof insulation and cover board.
 3. Manufacturer's standard sample of metal termination bars.
 4. 6 roof cover fasteners of each type, length, and finish.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install specified roofing system.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that the roofing system complies with requirements specified in the "Performance Requirements" Article. Upon request, submit evidence of meeting requirements.
- F. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- G. Product Test Reports: Based on evaluation of tests performed by manufacturer and witnessed by a qualified independent testing agency, indicate compliance of components of roofing system with requirements based on comprehensive testing of current product compositions.
- H. Research/Evaluation Reports: Evidence of roofing system's compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
- I. Maintenance Data: For roofing system to include in the maintenance manuals specified in Division 1.
- J. Warranty: Sample copy of standard roofing system manufacturer's warranty stating obligations, remedies, limitations, and exclusions of warranty.
- K. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer to perform work of this Section who has specialized in installing roofing similar to that required for this Project and who is approved, authorized, or licensed by the roofing system manufacturer to install manufacturer's product.
- B. Pre-installation Conference: Before installing roofing system, conduct conference at Project site to comply with requirements of Division 1 Section "Project Meetings." Notify participants at least 5 working days before conference.

1. Meet with Owner; Architect; Owner's insurer, if applicable; testing and inspecting agency representative; roofing Installer; roofing system manufacturer's representative; deck Installer; and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
4. Review loading limitations of deck during and after roofing.
5. Review flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing.
6. Review governing regulations and requirements for insurance, certificates, and inspection and testing, if applicable.
7. Review temporary protection requirements for roofing system during and after installation.
8. Review roof observation and repair procedures after roofing installation.
9. Document proceedings, including corrective measures or actions required, and furnish copy of record to each participant.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.07 PROJECT CONDITIONS

- A. **Weather Limitations:** Proceed with roofing work only when existing and forecasted weather conditions permit roofing to be installed according to manufacturers' written instructions and warranty requirements.

1.08 WARRANTY

- A. **General Warranty:** The warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. **Standard Roofing Manufacturer's Warranty:** Submit a written warranty, without monetary limitation, signed by roofing system manufacturer agreeing to promptly repair leaks resulting from defects in materials or workmanship and to repair cuts and punctures caused by rooftop service and maintenance activities for the following warranty period:
 - 1. Base Bid Warranty Period: 20 years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. **Basis of Design Product:** Subject to compliance with requirements, provide fully adhered UltraPly TPO as manufactured by **Firestone Building Products** or a comparable product by one of the following:
 - 1. Carlisle Syntec Systems
 - 2. Genflex Building Products
 - 3. GAF Roofing
 - 4. John Manville Roofing

2.02 TPO SHEET

- A. **Base Bid TPO Sheet:** Uniform, flexible sheet formed from thermal polyolefin, complying with ASTM D 4637, Type I, of the following grade, class, thickness:
 - 1. Grade: Reinforced
 - 2. Thickness: 60 mils, nominal.

3. Color shall be white- Color must have reflective index of 78 or more

2.03 INSULATION MATERIALS

- A. General: Provide preformed, roofing insulation boards that comply with requirements, selected from manufacturer's standard sizes and of thicknesses indicated. Insulation system shall include preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
- B. Polyiso insulation 2 layers (2.5) over occupied spaces and (1.5) over canopies. All shall be manufactured utilizing "Zero ODP" pentane blowing agents complying with ASTM C 1289-02, and classified by facer type as follows:
 1. Facer Type: Type II, felt or glass-fiber mat on both major surfaces.
 2. Tapered Polyiso Board Insulation: $\frac{1}{4}$ " slope, rigid, polyiso thermal insulation with an overall minimum thickness required to meet the tapered insulation design.
 3. Tapered Polyiso Board insulation crickets as indicated on drawings or where needed for positive drainage shall be sloped $\frac{1}{2}$ " per foot with a minimum thickness of $\frac{1}{2}$ ".

2.04 INSULATION ACCESSORIES

- A. General: Furnish roofing insulation accessories recommended by insulation manufacturer for intended use and compatible with sheet roofing material.
 1. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions of FM 4470, designed for fastening roofing insulation to substrate, tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.

2.05 AUXILIARY MATERIALS

- A. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with TPO membrane roofing.
- B. Furnish liquid-type auxiliary materials that meet VOC limits of authorities having jurisdiction.
 1. Sheet Flashing: 60 mil thick TPO, unsupported or cured, according to application.
 2. Flashing Accessories: Manufacturer's unsupported membrane, pre-manufactured detail accessories, and Quick seam product.

3. Bonding Adhesive: Manufacturer's LVOC bonding adhesive
4. Cleaner: Manufacturer's LVOC splice cleaner.
5. Primer: Manufacturer's LVOC Quick prime
6. Cut Edge Sealant: Manufacturer's standard single-component sealant.
7. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
8. Metal Termination Bar: Manufacturer's standard aluminum bar, approximately 1" wide, roll formed and pre-punched.
9. RPF Strip: Manufacturer's standard 6" wide reinforced perimeter fastening strip.
10. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions of FM 4470, designed for fastening sheet to substrate, and acceptable to roofing system manufacturer.
11. Walk-Way Pads: Heat welded or self adhered per manufacturer's recommendations.
12. Miscellaneous Accessories: Provide pourable sealers, in-seam sealants, termination reglets, and other accessories recommended by roofing system manufacturer for intended use.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas, and conditions under which roofing will be applied, with Installer present, for compliance with requirements.
- B. Verify that roof openings and penetrations are in place and set and braced and that roof drains are properly clamped into position.
- C. Verify that wood nailers are in place and secured and match thicknesses of insulation required.
- D. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean substrate of dust, debris, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of the roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.03 INSULATION INSTALLATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with roofing system manufacturer's written instructions for installing roofing insulation.
- C. Install tapered insulation under area of roofing to conform to slopes indicated and to Shop Drawings.
- D. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- E. Install two layer of insulation under area of roofing to achieve required thickness.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush with ring of drain.
- G. Install insulation with long joints of insulation in continuous straight lines with end joints staggered between rows, abutting edges and ends between boards. Insure top layer of insulation joints are staggered with bottom layer off insulation. Fill gaps exceeding 1/4 inch (6 mm) with insulation.
 - 1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- H. Attached Insulation: Install the insulation by securing to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roofing insulation to deck type indicated.

3.04 ADHERED SHEET INSTALLATION

- A. Install TPO sheet over area to receive roofing according to roofing system manufacturer's written instructions. Unroll sheet and allow to relax for a minimum of 30 minutes.
- B. Start installation of sheet in presence of roofing system manufacturer's technical personnel.
- C. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Apply bonding adhesive to substrate and underside of sheet at rate required by manufacturer and allow to partially dry. Do not apply bonding adhesive to splice area of sheet.
- E. Mechanically or adhesively fasten sheet securely at terminations and perimeter of roofing.
- F. Apply roofing sheet with side laps shingled with slope of roof deck where possible.
- G. Spread water cut off mastic over deck drain flange at deck drains and securely seal roofing sheet in place with clamping ring.
- H. Install adhered TPO sheet and auxiliary materials to tie in to existing roofing.

3.05 SEAM INSTALLATION

- A. Clean both faces of lap areas, heat weld laps to overlapping sheets according to manufacturer's written instructions to ensure a watertight seam installation.
- B. Repair tears, voids, and lapped seams in roofing that does not meet requirements.

3.06 FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of flashing sheet at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
- C. Flash penetrations and inside and outside corners with unsupported membrane or preformed flashing accessories as recommended by manufacturer.

- D. Clean splice areas, heat weld seams, and firmly roll side and end laps of overlapping sheets according to manufacturer's written instructions to ensure a watertight seam installation. Apply cut edge sealant and seal exposed edges of sheet flashing terminations per manufacturer's recommendations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.07 WALKWAY INSTALLATION

- A. Install walkway's around mechanical units, roof hatches, top and bottom of ladders and across roof to connect to walkway on adjacent roof.
- B. Clean membrane where walkway's are to be installed using manufacturer's splice cleaner.
- C. Attach walkway's using heat weld or self adhered methods as per manufacturer's Recommendations.

3.08 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.
 - 1. Notify Architect or Owner 48 hours in advance of the date and time of inspection.

3.09 PROTECTING AND CLEANING

- A. Protect sheet membrane roofing from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing that does not comply with requirements, repair substrates, reinstall roofing, and repair sheet flashings to a condition free of damage and deterioration at the time of Substantial Completion and according to warranty requirements.
 - 1. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

SECTION 07600

FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 RELATED WORK

- A. Section 07510 – 4-ply Built-up Roofing with Gravel Ballast and Insulation

1.03 DESCRIPTION OF WORK:

- A. Extent of each type of flashing and sheet metal work is indicated on the drawings and by provisions of this section.
- B. Type of work specified in this section includes, but is not limited to, the following:
 - 1. Metal counter flashing; and base flashing.
 - 2. Metal wall flashing and expansion joints.
 - 3. Built-in metal valleys, gutters and scuppers.
 - 4. Exposed metal trim/fascia units/coping units.
 - 5. Gravel stops.
 - 6. Gutters
 - 7. Miscellaneous sheet metal accessories.
- C. Roofing accessories, which are installed integral with roofing membrane, and provided by the roofing manufacturer, are specified in Section 07510 as part of roofing work.
- D. Set-on type, pre-manufactured unit roof accessories are specified in Section 07510 as part of roofing work.

1.04 SUBMITTALS:

- A. **Product Data:** Submit manufacturer's product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- B. **Samples:** Submit minimum 8" square samples of each type of specified sheet materials to be exposed as finished surfaces.
- C. **Shop Drawings:** Submit shop drawings showing layout, joining, profiles, and anchorages of fabricated work, including major counter-flashings, gutters, downspouts, scuppers and expansion joint systems. Provide layouts at 1/4"=1'-0" scale and details at 3"=1'-0" scale.

1.05 JOB CONDITIONS:

- A. Coordinate work of this Section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of work and protection of materials and finishes.

1.06 WARRANTIES

- A. Provide a five (5) year written guarantee on labor and a ten (10) year written guarantee on materials for all flashing and sheet metal work.

PART 2 - PRODUCTS**2.01 FLASHING AND SHEET METAL MATERIAL:**

- A. **Sheet Metal Flashings and Trim:**
 - 1. Counter Flashings, Scuppers, Built-in Receivers, Expansion Joint flashings and umbrella cones for roof mounted pipe supports:
 - a. **Stainless Steel:** ASTM A167 AISI 302/304, No 2D finish, temper as required for forming and performance; 0.018" thick (28 gage) except as otherwise indicated.
 - b. **Copper:** ASTM B370, cold rolled unless soft temper required for forming and performance; 16 ounce (0.0216" thick), except as noted
 - 2. Copings, Gravel Stops, Gutters, Down Spouts:
 - a. **Sheet Aluminum:** ASTM B 209, aluminum alloy, with "Kynar" fluorocarbon enamel finish; 0.032" thick except as otherwise indicated. Color as selected by Architect.

B. Miscellaneous Materials and Accessories:

1. Fasteners: Same metal as flashing and sheet metal or other non-corrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
2. Bituminous Coating: FS TT-C-494 or SSPC - Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
3. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, non-drying, non-migrating sealant.
4. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.
5. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of flashing sheet.
6. Solder for Sheet Metal: Except as otherwise indicated or recommended by metal manufacturer, provide 50/50 tin/lead type complying with ASTM B32; use rosin flux.
7. Reglets: Metal or plastic units of type and profile indicated, compatible with flashing indicated, non-corrosive.
8. Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size and gauge required for performance.
9. Roofing Cement: ASTM D 4586, asphaltic and non-asbestos containing.

C. Weather-Resistant Barrier

1. Acceptable products and Manufacturers: Grace Ice & Water Shield HT, as manufactured by W.R. Grace & Co., Grace Construction Products, Cambridge, MA.
2. Grace Ice & Water Shield is a cold-applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of rubberized asphalt adhesive. An embossed, slip resistant surface is provided on the polyethylene. Grace Ice & Water Shield is interwound with a disposable silicone coated release sheet.
 - a. Membrane shall conform to the physical properties as listed in table below:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Color:	Gray black	
Thickness/ Membrane:	40 mil (1.02 mm)	ASTM D3767 procedure A (Section 9.1)
Tensile Strength/ Membrane:	250 psi (1720 kN/m ²)	ASTM D412 (Die C Modified)
Elongation, Membrane: Low	250%	ASTM D412 (Die C Modified)
Temperature, Unaffected @ Flexibility:	-20°F (-29°C)	ASTM D1970
Adhesion to Plywood:	3.0 lbs/in. width (525 N/m)	ASTM D903
Permeance (Max):	0.05 Perms (2.9 ng/m ² s Pa)	ASTM E96
Material Weight Installed (Max)	0.3 lb/ft ² (1.3 kg/m ²)	ASTM D461

3. Provide High Temperature "Ice and Water Guard" at all metal roof and wall panel areas including covering all fascia and perimeter edge wood. Provide one of the following: Carlisle "WIP 300" or Soprema "Lasto Bond Shield HT".

2.02 FABRICATED UNITS:

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated with exposed edges folded back to form hems.
- B. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Horizontal seams, such as copings, shall be standing seams. Gutters-seams, apply waterblock or butyl caulk before joining pieces together. Seal joined seams with EPDM flashing membrane.

- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.
- E. Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

PART 3 - EXECUTION

3.01 INSTALLATION REQUIREMENTS:

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations, and with SMACNA "Architectural Sheet Metal Manual." Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible and set units true to line and level as indicated. Install work with laps, joints and seams which will be permanently watertight and weatherproof.
- B. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- C. Install reglets to receive counter-flashing in manner and by methods indicated. Where shown in concrete, furnish reglets for installation in work of Division 3 Sections. Where shown in masonry, furnish reglets for installation in work of Division 4 Sections.
- D. Install counter flashing in reglets, either by snap-in seal arrangement, or by wedging in place for anchorage and filling reglet with mastic or elastomeric sealant, as indicated and depending on degree of sealant exposure.
- E. All stainless steel or copper metal through wall flashing, gravel stops, pitch pockets, rain collars and expansion joints with lapped joints shall be soldered water tight.

3.02 WEATHER-RESISTANT BARRIER

- A. Install the membrane directly on a clean, dry, continuous structural plywood sheathing, blocking, and other locations as indicated. Remove dust, dirt, loose nails, and old roofing materials. Protrusions from the substrate area must be removed. Deck shall have no voids, damaged, or unsupported areas. Repair areas before installing the membrane. Install membrane in accordance with

manufacturer's printed directions.

3.03 CLEANING AND PROTECTION:

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Protection: Installer shall advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction. Ensure that work shall be without damage or deterioration, due to factors other than natural weathering, at time of acceptance by Owner.

END OF SECTION

SECTION 07830

ROOF HATCHES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Section 07510 – 4 ply Built-up Roofing with Gravel Ballast and Insulation.

1.03 SUBMITTALS

- A. Submit shop drawings indicating materials, methods of fabrication and requirements for anchoring to adjacent and supporting construction.
- B. Submit manufacturer's product data, including catalog sheets and technical information.

1.04 WARRANTY

- A. Provide five (5) year written guarantee on installation labor.
- B. Provide five (5) year written guarantee on roof hatch.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Babcock –Davis (www.babcockdavis.com): Model BA3630 – 3'-0"X2'-6"
- B. Bilco (www.bilco.com): Type S-50 - 3'-0" x 2' x 6".
- C. Milcor, Inc. (www.milcorinc.com): Type RD-1 - 3'-0" x 2'-6".
- D. Dur-Red Products (www.dur-red.com): LH-A - 3'-0" X 2'-6".
- E. Other manufacturers, pre-bid approved in accordance with Section 01630, shall be acceptable.

2.02 PRODUCT DESCRIPTION

- A. Product Features:

1. Cover and Liner: .090 Aluminum (11 GA) cover and .040 Aluminum liner.
2. Frame: .090 Aluminum, 12 high, with 3 1/2" wide mounting flange
3. Insulation Core: 1" rigid fiberglass for cover and curb perimeter.
4. Cover Operation: Torsion bar spring, concealed in telescoping tube, and contained within the confines of the hatch.
5. Hold-open Arm: Automatically locking, with grip handle
6. Latching Device: Spring latch with exterior and interior turn handles
7. Hinges: Zinc plated steel tamper proof hinge assembled on the inside of the hatch as part of spring assembly
8. Padlock hasp mounted on inside of hatch
9. Weatherseal: Closed-cell rubber.
10. Hardware Finish: Zinc plated.

2.03 SAFETY RAILING SYSTEM

- A. Provide roof hatch manufacturer's standard roof hatch safety railing system, compatible with hatch size specified. Safety railing shall comply with OSHA Fall Protection Regulation 29 FR 1910.23.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Inspect the locations where hatch(es) shall be installed. Verify that openings are properly constructed, and that adjacent supporting substrates are clean, dry and free of foreign matter. Notify Owner's Representative and Architect if any adverse conditions are encountered that would interfere with proper installation. Do not proceed until such conditions have been corrected.

3.02 INSTALLATION

- A. Install hatch(es) in accordance with manufacturer's written installation instructions. Securely attach to supporting substrates.
- B. Hatch(es) shall be provided with security intrusion switch connected to building Security Intrusion system as part of the work of Division 16.

END OF SECTION

SECTION 07900

SEALANTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK-NOT APPLICABLE.

1.03 REFERENCE STANDARDS

- A. FS TT-S-230C - Sealing Compounds, Synthetic Rubber, Single Component, Chemically Curing
- B. FS-TT-S-00227E – Sealing Compound, Elastomeric Type, Multi-Component
- C. FS TT-S-.001657 Sealing Compound, Single Component, Butyl Rubber Based Solvent Release Type.
- D. ASTM C834 - Latex Sealing Compounds.
- E. ASTM C920 – Elastomeric Joint Sealant Compounds
- F. ASTM E90 – Airborne Sound Transmission Loss

1.04 SUBMITTALS

- A. Comply with applicable provisions of Section 01340, Shop Drawings, Product Data and Samples.
- B. Submit sealant manufacturer's catalog and technical data, including surface preparation and installation instructions. Include data for compressions seals, backer rods, bond breakers, and other accessories for joint conditions as detailed or required by Drawings, and per manufacturer's recommendations.
- C. Submit samples of sealant colors.

1.05 WARRANTY

- A. Provide a two (2) year written warranty covering materials and installation.

PART 2 - PRODUCTS**2.01 SEALANT MANUFACTURERS**

- A. The materials specified in 2.02 are products manufactured by Pecora Corporation (www.pecora.com); (Basis of Specification)
- B. Other manufacturers, pre-bid approved in accordance with Section 01630, and complying with the requirements and the intent of this Section shall be acceptable.

2.02 SEALANT MATERIALS

- A. Type 1: "AC-20+Silicone"; one-part, non-sag, acrylic latex caulk, complying with ASTM C834.
- B. Type 2: "Dynatrol II"; two part urethane, non-sag, 50% maximum movement capability for extension/compression; complying with FS TT-230C, TT-S-00227E, Type II and ASTM C920; Type M, Grade NS.
- C. Type 3: "Urexpan NR-201"; one part urethane, self-leveling (Type I), 25% maximum movement capability for extension/compression; complying with FS TT-S-230C, ASTM C920.
- D. Type 4: "AC-20FTR"; one part, modified acrylic latex acoustical sealant, complying with ASTM E90-16 ASTM C834.
- E. Type 5: "BC-158" Butyl Sealant, Federal Specification FS TT-S-001657 (Type I), Shore A hardness of 25 or greater.

2.03 PRECOMPRESSED SEALANT TAPE

- A. "Will-Seal" as manufactured by Illburck, U.S.A.
 - 1. Tape Type 150; tape number W-820.
- B. Install in compliance with manufacturer's recommendations.
 - 1. Verify conditions of installation (and actual field dimensions) with manufacturer's supplier as for correctness of installation.
- C. See Drawings for locations and details

2.04 NEOPRENE COMPRESSION SEAL

- A. Preformed vulcanized elastomeric compound as manufactured by Watson Bowman Acme Corp.
 - 1. Heavy Duty Seal, WA Series, Number WA-162.

2. Install utilizing manufacturer's recommended lubricant type adhesive.
- B. Prepare and shape material adjoining seal in compliance with manufacturer's recommendations.
- C. Install in compliance with manufacturer's recommendations.

2.05 ACCESSORIES

- A. Primer: Non-staining type, as recommended by sealant manufacturer for type of sealant, joint substrate, and size of joint.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Backer Rod: Round, closed cell polyethylene or "Denver Foam" polyurethane foam rod as required by manufacturer for type of sealant; oversize 30 to 50 percent.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.
- E. Masking Tape: To prevent application of sealant on surfaces not scheduled to receive it. Tape shall be removable without damage to substrate.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Verify that joint dimensions, physical and environmental conditions are acceptable to receive work of this Section.
- B. Beginning of installation shall indicate acceptance of condition of substrates and of adjacent installed work.

3.02 PREPARATION

- A. Clean, prepare, and size joints in accordance with manufacturer's written instructions. Remove any dirt, grease, loose materials and other foreign matter that might impair adhesion and proper performance of sealant.
- B. Verify that joint shaping materials and release tapes are compatible with sealant.
- C. Examine joint dimensions and size materials to achieve width/depth ratios as required by manufacturer.
- D. Use backer rod to achieve required joint depths, and to allow sealants to perform in accordance with manufacturers technical specifications.

- E. Use bond breaker tape where recommended by the sealant manufacturer and where indicated on the Drawings.

3.03 INSTALLATION

- A. Seal exterior joints subject to moisture penetration and interior joints exposed to view with sealant specified in schedule below.
- B. Perform work in accordance with latest ASTM requirements for type of sealant and type of application.
- C. Install sealant in accordance with manufacturer's written instructions.
- D. Apply sealant within manufacturer's recommended temperature ranges. Consult manufacturer prior to installation when sealant cannot be applied within recommended temperature ranges.
- E. Tool joints to a concave profile.
- F. Joints shall be free of air pockets, foreign embedded matter or other foreign substances. Joints shall be uniform, free of ridges, and sags.

3.04 SCHEDULE

- A. Type 1: Interior non-moving joint applications.
- B. Type 2: Exterior vertical surface applications, and interior moving joint applications.
- C. Type 3: Exterior horizontal surface applications.
- D. Type 4: Interior acoustical applications.
- E. Type 5: Radon mitigation joints where slabs abut foundation walls.

3.05 CLEAN-UP

- A. Clean adjacent surfaces of excess sealant and sealant droppings as the work progresses, using solvents or cleaning agents recommended by manufacturer for surfaces to be cleaned.
- B. Upon completion of sealant installation, remove all associated debris, empty containers, and surplus sealant from the job site. Do not leave excess sealants and accessories on the premises as "attic stock".

END OF SECTION

SECTION 09510

ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 REFERENCE STANDARDS

- A. ASTM A366 - Standard Specification for Steel, Carbon Cold-Rolled Sheet, Commercial Quality.
- B. ASTM A641 - Standard Specification for Zinc-Coated (galvanized) Carbon Steel Wire.
- C. ASTM C635 - Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
- D. ASTM C636 - Standard Practice For Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- F. ASTM E1264 - Classification for Acoustical Ceiling Products.
- G. Provide data that the products meet or exceed the VOC content requirements of CHPS and GreenGuard certification.

1.03 WORK EXCLUDED

- A. Bulkheads (for changes in ceiling elevations greater than 8") and moisture resistant ceiling systems are covered elsewhere in applicable sections of Division 9.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical literature and installation instructions for each type of panel and grid suspension system specified in this section.
- B. Samples: Provide 6" x 6" samples of each type of specified panel, and 12" long samples of exposed grid system (main runner, cross tee, and wall molding). Provide four (4) samples of each component specified.

C. Certifications:

1. Provide manufacturer's certifications indicating compliance with specified requirements, including laboratory test reports conducted in accordance with specified tests and standards.
2. Provide VOC Emission Test Certificate in compliance with California Department of Public Health (CDPH).
3. Provide data information of the Recycled Content.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not install acoustical ceilings until building is enclosed, sufficient heat is provided, dust generating activities have terminated and overhead mechanical work is completed, tested and approved and until ceiling concealment inspection has been satisfactorily completed.
- B. Allow wet work to dry thoroughly prior to commencement of installation.
- C. Maintain uniform temperature of minimum (61 degrees F) and humidity of 20 percent to 40 percent prior to, during and after installation.

1.06 WARRANTIES

- A. Provide manufacturer's 10-year limited warranty against visible sag of panels when subjected to environmental conditions of 104°F and 90% relative humidity.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original unopened packaging with all identification labels intact. Store in a dry; secure area, protected from exposure to moisture, sunlight, surface contamination, construction damage and other harmful conditions.
- B. Handle components to prevent damage to panel edges, grid components and panel and grid finishes.

1.08 FIRE RATED SYSTEM (*WHERE APPLICABLE*)

- A. See Drawings for location and hourly rating.
 1. UL rated ceiling/roof design: UL Design shall be strictly adhered to for all aspects of assembly design and UL classified components.
 2. UL rated ceiling/floor design: Strictly comply with all aspects of UL assembly design, including required UL classified components.

3. Fire classified panels shall have the embossed label indicating UL classification for suitability of use in the rated assembly.

1.09 CEILING CONCEALMENT INSPECTION

- A. See Section 01700 for inspection that is to be conducted prior to installation of ceiling panels.

1.10 REPLACEMENT OF EXISTING ACOUSTICAL TILE CEILING (*RENOVATIONS*)

- A. Work shall include removal and replacement of existing acoustical tile ceilings (panels and grid) where called for on the drawings.
- B. Remove and replace acoustical tile ceilings (panels only) where called for on the drawings.

1.11 REMOVAL, STORAGE, AND REPOSITIONING OF EXISTING TILE CEILING (*RENOVATIONS AND ALTERATIONS*)

- A. Where panels and/or grid members must be removed to accommodate work in existing ceiling space, carefully remove, store and protect such items from construction damage. Prior to removing, tag any panels or grid that are damaged, and notify Architect and Owner's Representative. Carefully reposition panels and grid once overhead work in ceiling is completed.

PART 2 - PRODUCTS

2.01 SUSPENSION SYSTEM

- A. Acceptable System: ASTM C-635 heavy duty system, double web exposed main runners and cross tees. Intermediate duty shall not be acceptable. Approved manufacturers shall be as follows:
 1. Standard of Quality: Chicago Metallic Series 200 main runners and Series 229 cross tees, at 24" and 209 at 48".
 2. Armstrong "Prelude XL": Series 7301 for main runners and Series 7328 for 24" cross tees (Series XL 7348 for 48" cross tees).
 3. Pre-bid approved manufacturer in accordance with Section 01630.
- B. Standard Grid: Non-fire rated, 15/16" exposed face, with components die cut and interlocking. Where indicated on Drawings, provide fire rated grid in compliance with UL Design Assembly.
- C. Accessories: Splices, and edge moldings as required to complete, and compliment suspended ceiling grid system.

- D. Materials/Finish: Commercial quality rolled steel with galvanized coating; white baked enamel finish on exposed surfaces.
- E. Hangers: Minimum 12 gauge (0.106") galvanized carbon steel wire per ASTM A641 (Class 1); soft temper, pre-stretched with a yield stress load of at least 3 times design load; size and type to suit application and to rigidly secure complete acoustic unit ceiling system, with maximum deflection of 1/360.
- F. Retention clips: for fire resistive ceiling/floor and ceiling/roof assemblies, and for ceiling areas adjacent to exterior doors in corridors; provide spring steel clips as required by rated assemblies, and as recommended by manufacturer for impact resistance.
- G. Fascia Mouldings: For changes in ceiling elevations that are 8" or less:
 - 1. Material/Finish: Commercial quality rolled steel with galvanized coating; white baked enamel finish (to match grid components) on exposed surfaces.
 - 2. Approved Manufacturers:
 - a. Armstrong #7814 (4" height), #7816 (6" height) or #7818 (8" height) depending on change in elevation. Flange width: 1".
 - b. Comparable products of other ceiling system manufacturers approved under 2.01A of this Section shall be acceptable.

2.02 LAY-IN PANELS

- A. Standard Acoustical Panels (Type 1)
 - 1. General characteristics: Mineral fiber composition, wet formed, factory applied white finish, class A flame spread, Type III, Form 2 per ASTM E1264; square edge design. Surface pattern shall be available in Fire Rated panels where rated assemblies occur.
 - a. Pattern: Fissured, non-directional surface
 - b. Light Reflectance: 0.70 - 0.81
 - c. NRC: .70
 - d. CAC: 40
 - e. Size: 24" x 48" x 5/8" thick

2. Approved Manufacturers
 - a. Armstrong World Industries, Inc., "School Zone Fine Fissured" with "HumiGuard Plus" #1714
 - b. United States Gypsum Company (USG) "Radar Clima Plus," #2444
 - c. Certain Teed "Fine Fissured" (HHF-497 DP)
 - d. Pre-bid approved Manufacturer in accordance with Section 01630
- B. Impact Resistant Acoustical Panels (Type 2)
 1. General Characteristics: ASTM E1264, Type III, Form 2, Class A (25 or less). Impact resistant in accordance with Gardner Impact Test or other comparable test procedure. Square edge design. Surface pattern shall be available in Fire Rated Panels where rated assemblies occur.
 - a. Pattern: medium coarse, or lightly perforated/lightly textured, non-directional texture
 - b. Light Reflectance: 0.75 to 0.85
 - c. NRC: 0.50 or better
 - d. CAC: 35 to 39
 - e. Size: 24" x 48" x 5/8"
 2. Approved Manufacturers
 - a. Armstrong "School Zone Fine Fissured" with "HumiGuard Plus" #466
 - b. USG "Rockface Clima Plus"
 - c. Certain Teed "School Board" (SB-197)
 - d. Pre-bid approved manufacturer in accordance with Section 01630
 3. Impact resistant panels shall be used at corridors, locker rooms, student toilets, individual toilets, and janitor closets. Refer to Drawings for individual space requirement.

C. Washable Acoustical Panels (Type 3)

1. General characteristics: Class A, ASTM E1264, Type IV, Form 2, water felted, mineral base with membrane faced overlay. Square edge.
 - a. Pattern: Non-perforated surface. Surface pattern shall be available in fire rated panels where rated assemblies occur.
 - b. Finish: Vinyl faced white
 - c. Light Reflectance: 0.83 - 0.88
 - d. Size: 24" x 48" x 5/8" or 3/4" thick
 - e. USDA approved for incidental food contact.
2. Approved Manufacturers
 - a. Armstrong "Clean Room VL" with HumiGuard Plus" (non-perforated)
 - b. USG "Clean Room Clima Plus" (Class 100)
 - c. Capaul "Vinylshield A" with "HUM 90" Humidity Rating
 - d. Pre-bid approved manufacturer in accordance with Section 01630

D. Enhanced Acoustical Panels (Type 4):

1. General Characteristics: Square edge design, mineral fiber composition, wet formed, factory applied white finish. ASTM E1264 Classification: Type III, Form 2. Class A flame spread.
 - a. Pattern: Fissured, non-directional surface.
 - b. Light Reflectance: 0.78 – 0.85.
 - c. NRC: 0.70
 - d. Size: 24" x 48" x 3/4"
2. Approved Manufacturers:
 - a. Armstrong "Fine Fissured High NRC/High CAC" with "Humigard Plus," #1811.
 - b. U.S. Gypsum Company, "Radar Clima Plus High HRC," #22311.
 - c. Celotex "Baroque High NRC" (BET-497 DP)

- d. Pre-bid approved manufacturer in accordance with Section 01630.
- E. Fire Rated Acoustical Boards: Of same manufacturer as standard and impact Acoustic Boards and in same surface pattern and size. See plans for locations of areas requiring fire rated board. Fire rated boards shall be embossed to provide evidence of classification.
- F. "Attic Stock": Provide extra ceiling panels of each type specified, in quantities equal to 2% of the total square footage of each type installed. All attic stock shall be clearly marked to indicate type of panel.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas where Work of this Section shall be installed. Notify the Architect and Owner's Representative of any adverse conditions encountered that would interfere with the proper installation of acoustical ceiling systems. Do not proceed until such conditions have been corrected. Work shall not commence until the work of "wet" trades has been finished and is thoroughly dry, and all major above-ceiling work is complete.

3.02 INSTALLATION

- A. Install acoustical ceiling systems in accordance with ASTM C-636 and manufacturer's written instructions to produce finished ceiling true to lines and levels, free from warped, soiled or damaged grid or lay-in panels.
- B. Install ceiling systems in a manner capable of supporting superimposed loads, including light fixtures, with maximum permissible deflection of 1/360 of span and maximum surface deviation of 1/8 inch in 20 feet.
- C. Coordinate the location of hangers with other installed work. Ensure hangers are located to accommodate fittings and units of equipment placed after installation of ceiling grid systems.
- D. Suspend main runners from overhead structure with hanger wires spaced 4'-0" on center along the length of the runner. Hanger wire shall be plumb and straight.
- E. Where ducts or other equipment prevent regular spacing of hangers, provide additional hangers to adequately support ceiling.
- F. Hang suspension system independently of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of the longitudinal axis or face plane of adjacent members.

- G. Center ceiling systems on room axis leaving equal borders unless indicated otherwise by reflected ceiling plan shown on drawings.
- H. Install edge moldings at intersection of ceiling and vertical surfaces, using maximum lengths, straight, true to line and level. Miter corners. Provide edge moldings at junctions with other ceiling finishes. Where bullnose concrete block corners occur, provide preformed closers to match edge molding.
- I. Fit acoustic lay-in panels in place, free from edge damage or other defects detrimental to appearance and function. Fit border units neatly against abutting surfaces.
- J. Install lay-in panels level, in uniform plane and free from twist, warp and dents.

3.03 ADJUSTMENTS

- A. Adjust sags or twists which develop in the ceiling systems and replace parts that are damaged or faulty. Remove and replace damaged components that cannot be successfully adjusted or restored.

3.04 CLEANING

- A. Clean acoustical ceilings, including trim, edge moldings and suspension members in accordance with manufacturer's written recommendations.
- B. Remove all excess materials, packaging, installation debris, and other rubbish associated with the work of this Section from the work site and dispose of legally.

END OF SECTION

SECTION 15010

GENERAL PROVISIONS

PART I - GENERAL

1.01 GENERAL

- A. The Bidding and Contract Requirements and Division 1 -General Requirements for the Construction of this project shall apply to this division and all sections herein.
- B. Where items under the Bidding and Contract Requirements, and Division 1 - General Requirements are repeated in this section, it is intended to call particular attention to or qualify the items. It is not intended that any other parts under the Bidding and Contract Requirements of Division 1 - General Requirements shall be assumed to be omitted if not repeated herein.

1.02 SCOPE

- A. The work included under this Division shall include a complete mechanical system as shown on the drawings and as specified herein. Any apparatus, appliance, material or work not shown on the drawings but mentioned in the specifications, or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be furnished, delivered and installed by the contractor without additional expense to the Owner.
- B. The contractor shall note that all items of equipment are specified in the singular; however, the contractor shall provide and install the number of items of equipment as indicated on the drawings and as required for a complete system.
- C. It is the intention of the specifications and drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean, "provide and install complete and ready for use."
- D. Minor details not usually shown or specified but necessary for proper installation and operations shall be included in the contractor's estimate, the same as if herein specified or shown.
- E. This contractor shall be responsible for participation and coordination with the Commissioning process as specified in section 01660.

1.03 APPLICABLE SPECIFICATIONS, CODES, STANDARDS AND PERMITS

- A. All equipment, materials and installation shall conform to the requirements of national, state and local codes, laws, ordinances, rules and regulations. All utility connections shall conform to the requirements of the local utilities.

- B. Unless otherwise specified herein or shown on the contract drawings, the work and materials shall conform to the applicable requirements of the following codes, standards and regulations:
1. VUSBC Virginia Uniform Statewide Building Code
 2. BOCA Building Officials & Code Administrators International, Inc.
 3. ICC International Code Council
 4. AMCA Air Movement and Control Association International, Inc
 5. ARI Air Conditioning & Refrigeration Institute
 6. ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers
 7. ASME American Society of Mechanical Engineers
 8. ASTM American Society of Testing Materials
 9. NEC National Electrical Code
 10. NFPA National Fire Protection Association
 11. OSHA Occupational Safety and Health Association
 12. SMACNA Sheet Metal and Air Conditioning Contractors National Association
 13. UL Underwriters Laboratories, Inc.
 14. ANSI American National Standards Institute
 15. AWS American Welding Society
 16. NEMA National Electrical Manufacturer's Association
 17. CISPI Cast Iron Soil Pipe Institute
 18. IRI Industrial Risk Insurers
 19. CAA Clean Air Act Amendment of 1990 (Title VI, Section 608)
 20. CTI Cooling Tower Institute
- C. Contractor shall give all necessary notices, obtain all permits and pay all Government taxes, fees and other costs, including costs for water, sewer, and

gas connections or extensions including meters, in connection with his work, file all necessary plans, prepare all documents and obtain required certificates of inspection for work and deliver same to Owner before request for acceptance and final payment for work.

- D. The contractor shall be responsible for purchasing equipment and appliances that bear the label of an agency, as approved by the Department of Public Works and Environmental Services (DPWES), Fairfax County. It shall be the responsibility of the contractor to pay for any label testing of equipment or appliances that are installed without the label of a DPWES approved agency.

1.04 SHOP DRAWINGS

- A. The contractor shall submit eight (8) copies of the shop drawings to the Architect for review with ample time for checking prior to delivery of any of this equipment or material to the job site. The project's and the contractor's names shall be on each submittal.
- B. Shop drawings shall be submitted on all major pieces of equipment and material. Each item of equipment proposed shall be a standard catalog product of an established manufacturer. The shop drawing shall give complete information on the proposed equipment such as: capacity, size, construction, material, dimensions, arrangement, operating clearances, performance characteristics, weight and rating authority. Each item of the shop drawing shall be properly labeled, indicating the intended service of the material.
- C. The contractor shall, before submitting the shop drawings of the equipment to the Architect, check each item of the shop drawings to verify the proper equipment. Items to check shall include but not be limited to:
- 1) Will equipment physically fit into space;
 - 2) proper equipment for the job; electrical characteristics;
 - 3) voltage matches that of electric service; proper arrangements for connections;
 - 4) meets code requirements.
- D. The shop drawings shall be neatly bound and submitted to the Architect with a letter of transmittal, which shall list each item, submitted with the manufacturer's name.
- E. Review of the shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings have been reviewed, said review does not mean that drawings have been checked in detail; said review does not in any way relieve the contractor from his responsibility or the necessity of furnishing material or performing work as required by the contract drawings.

1.05 EQUIPMENT DEVIATIONS

- A. Where the contractor proposes to use an item of equipment other than the prototype equipment (a specified manufacturer's equipment used as the basis of design) or that detailed on the drawings which requires any redesign of the structure, partitions, foundations, piping, wiring or any other part of the mechanical, electrical or architectural layout, all such redesign and all new drawings and detailing required therefore shall be prepared by the contractor at his own expense and be approved by the Owner and Engineer.
- B. Where such deviation from the prototype equipment requires a different quantity and arrangement of materials and equipment, the contractor shall furnish and install any such ductwork, piping, structural supports, insulation, controllers, motors, starters, electrical wiring and conduit and any other additional equipment required by the system at no additional cost to the Owner.

1.06 QUALIFICATIONS FOR BIDDERS

- A. The contractor shall examine drawings and specifications relating to work of all trades and become fully informed as to the extent and character of work required and its relation to all other work in the project prior to submission of bid or prior to start of any construction covered by these specifications and drawings.
- B. Before submitting bid the contractor shall visit the site and examine all adjoining existing building, equipment and space conditions on which his work is in any way dependent, for the best workmanship and operation according to the intent of the specifications and drawings. Contractor shall verify dimensions and fully inform himself as to the nature and scope of the proposed work and also the conditions under which it is to be conducted. He shall report to the Owner any conditions that in his estimation might preclude him from installing his equipment and work in the manner intended and noted on the drawings and in this specification. Failure to take the above precaution will in no way relieve the contractor from his obligations to provide the material and work as indicated and as specified without additional cost to the Owner or extension of completion time.

1.07 TEMPORARY FACILITIES

- A. Are specified under Temporary Facilities, the General Conditions, Supplementary General Conditions, and Division I. General requirements are hereby made a part of this section as fully as if repeated herein.

1.08 DRAWINGS

- A. The drawings are diagrammatic, indicating general arrangement of work, and should not be scaled to establish location of work. The drawings show the size of piping and ductwork branches, risers and equipment, and must be followed. Where a change of location or method of running becomes necessary due to obstructions or other construction difficulties, such changes shall be made after

- securing approval of the Owner in writing and at no increase in amount of contract.
- B. Decisions regarding any and all substitutions and options permitted by the specifications shall be submitted for approval to the Owner. Approval will only be recognized when in writing.
 - C. In finished spaces all piping and ductwork shall be concealed or run behind furring unless shown otherwise. Where concealing is not possible piping and ductwork may be exposed after obtaining the Owner's approval.
 - D. All horizontal piping and ductwork not run below slab on grade shall be run as close as possible to underside of floor and parallel to building lines. Maintain maximum headroom in all areas.
 - E. All vertical piping and ductwork shall be run as close to walls and partitions as practicable.
 - F. Coordination of all other trades prior to erecting any piping or ductwork is required to avoid conflict between various components of the building.

1.09 COOPERATION WITH OTHER TRADES

- A. The contractor shall give full cooperation to other trades and shall furnish in writing, with copies to the Owner, any information necessary to permit the work of all trades to be installed satisfactorily with the least possible interference or delay.
- B. Where the work of the contractor will be installed in close proximity to work of other trades, or where there is evidence that work will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. This contractor shall prepare composite working drawings at a scale not less than $1/4" = 1'-0"$ clearly showing how his work is to be installed in relation to the work of the other trades. If the contractor installs his work before coordinating with other trades or as to cause any interference with work of other trades he shall make necessary changes to his work to correct the condition without additional cost to the Owner.
- C. The contractor shall furnish to other trades as required all necessary templates, patterns, setting plans and shop details for the proper installation of the work and for the purpose of coordinating adjacent work.
- D. Structural support elements as shown on the drawings must be in place prior to the installation of piping or the setting of rooftop equipment. The contractor shall not install any piping or rooftop equipment until such elements are in place.

1.10 ELECTRICAL WIRING

- A. The contractor shall, regardless of voltage, furnish and install all temperature control wiring, all interlock wiring, and equipment control wiring for the equipment that the contractor furnishes unless otherwise noted. Division 16 will furnish and install power wiring to the mechanical equipment and make electrical connections unless otherwise noted on the drawings.
- B. All electrical wiring furnished under the mechanical contract shall conform with Division 16.

1.11 FOUNDATIONS AND SUPPORTS

- A. Contractor shall provide all necessary foundations, supports, pads and bases required for mechanical equipment and any other equipment furnished under this contract, unless covered under the architectural or structural work.
- B. For buried concrete or cast iron sewer piping installed in filled cuts over four (4) feet in depth the contractor shall provide brick or approved equal supports or piers under piping and fittings with piers or supports extending to a depth to provide sufficient firm and adequate support to overcome the possibility of any deflection in the piping system.
- C. For pumps, compressors and other rotating machinery and all equipment where foundations are indicated, furnish and install concrete pads 4" in height (unless otherwise noted) extending not less than 4" beyond equipment base in all directions. Equipment installed in areas other than slab on grade shall be installed with the appropriate vibration assembly.
- D. Construction of foundations, supports, pads, bases and piers where mounted on the floor, shall be of the same materials and same quality of finish as the adjacent and surrounding flooring material.

1.12 SCAFFOLDING, RIGGING AND HOISTING

- A. Unless otherwise specified, contractor shall furnish all scaffolding, rigging, hoisting, shoring and services necessary for erection and delivery into the premises for any equipment and apparatus furnished and shall remove same from premises when no longer required.

1.13 EXCAVATION AND BACKFILL

- A. The contractor shall be responsible for excavation, backfill, tamping, shoring, bracing, pumping, street cuts, repairing of finished surface and all protection for safety of persons and property as required for installing a complete mechanical/plumbing system. All excavation and backfill shall conform to the architectural section of the specifications.

- B. It shall be the responsibility of the contractor to check the indicated elevations of utilities entering and leaving the building. If such elevations require excavations lower than the footing levels, the Owner shall be notified of such conditions and redesign shall be made before excavations are commenced. It is also the responsibility of the contractor to make the excavations at the minimum required depths in order not to undercut the footings.
- C. The trench shall be excavated below the installation level of the bottom of the pipe. The trench shall be filled with sand or fine gravel so entire length of barrel of piping rests on solid bed of sand or fine gravel. The backfill shall be filled in layers of 6" max depth and such layers shall be compacted after each placement.
- D. Excavation shall be made in a manner to provide a uniform bearing for pipes. The pipe elevation shall be determined by the contractor to meet the plumbing codes. Where rock is encountered, excavate 3" below pipe grade and back fill with sand to the installation level of the pipe. The pipe, including the joints, shall not rest on rock at any point.
- E. After required test and inspections, backfill the ditch and tamp. The first foot above the pipe shall be hand backfilled with rock free clean earth. The backfill in the ditches on the exterior and interior of the building shall be tamped to 95% of the standard Proctor maximum dry density (ASTM D-698). The contractor shall be responsible for any of his ditch walls that cave in.

1.14 CUTTING AND PATCHING

- A. On new work the contractor shall furnish sketches showing the locations and sizes of all openings and chases, and furnish and locate all sleeves and inserts required for the installation of the mechanical work before the walls, floors and roof are built. The contractor shall be responsible for the cost of cutting and patching where any mechanical items were not installed or where incorrectly sized or located. The contractor shall do all drilling required for the installation of his hangers.
- B. On alterations and additions to existing projects, the contractor shall be responsible for the cost of all cutting and patching unless otherwise noted.
- C. No structural members shall be cut without the approval of the Owner, and all such cutting shall be done in a manner directed by him. All patching shall be performed to match the existing surface in shape, texture and color.

1.15 ACCESSIBILITY

- A. The contractor shall locate equipment, which must be serviced, operated or maintained in fully accessible position. Equipment shall include but not be limited to: valves, traps, or low limit devices, damper operators, motors, controllers, drain points, fusible links of fire dampers, fire dampers, filters, etc. If required for better accessibility, furnish access doors for this purpose. Minor deviations from

drawings may be made to allow for better accessibility, and any change shall be approved. Motor starters shall be installed not more than 6'-0" above finished floor unless otherwise approved by the Owner.

- C. All filters furnished with air handling equipment shall be readily removable from sides or bottom of cabinet as required by equipment location. Contractor shall verify location of all equipment and proper location of access to filters for removal before submitting shop drawings, placing order for equipment and setting and connecting of equipment. Any filters deemed by the owner to be inaccessible after installation will be made accessible by the contractor at no additional cost to the owner.

1.16 RECORD DRAWINGS

- A. The contractor shall keep daily updated accurate records of all deviations in work as actually installed from work indicated on the contract drawings. The record drawings shall be kept at the job site, available to the Owner at all times and labeled as "Project Record Information - Job Set". When work is completed one complete set of marked-up prints shall be delivered to the Owner.

1.17 PERSONNEL INSTRUCTION AND OPERATING INSTRUCTIONS

- A. The contractor shall submit for approval three (3) copies of all of the manufacturer's installation, operating and maintenance manuals for all new mechanical equipment listed in the equipment schedule, all necessary components of mechanical equipment, testing and balancing reports, equipment start-up records, equipment capacity (input and output) and a list of filter sizes and belt sizes for all mechanical equipment that requires filters and belts (this includes, but is not limited to, fan coils, unit ventilators, rooftop units, cabinet heaters, exhaust fans and air handlers). Submit four (4) copies of the operating and maintenance manuals for the automatic temperature control system components and diagrams for approval. A complete written narrative of how each system is intended to operate shall be included. Manuals shall be assembled in black vinyl hardback loose-leaf binders, labeled with job name, address and date. Information on each piece of equipment of system shall be in a separate tab labeled section. Provide a complete index of the contents. After approval by the Engineer the binders shall be forwarded to the Owner.
- B. After all tests are conducted and approved as specified below, furnish a competent operating engineer for a period of two days to instruct and demonstrate to the Owner or his authorized representative the operation of the system. The mechanical systems demonstration shall not coincide with the electrical demonstration. Notify the owner in writing of the person to whom this instruction was given and the date it was given.
- C. On phased construction projects the aforementioned equipment start-up records shall be completed and made available to the owner for review prior to the occupancy of the completed phase.

1.18 TESTS

- A. The contractor shall, at his expense, conduct capacity and general operating tests on each system. The test shall demonstrate the specified capacities of the various pieces of equipment and shall be conducted in the presence of the Owner or his authorized representative. The general operating tests shall demonstrate that the entire equipment is functioning in accordance with the contract documents. Furnish all instructions and test equipment.
- B. After all systems are completely tested, submit three copies of the test results to the Owner for approval before final acceptance of project.

1.19 EQUIPMENT AND SYSTEMS CHECKOUT AND START-UP

- A. This contractor is responsible for the checkout and start-up of all equipment and systems. Equipment start-up shall be in accordance with the manufactures requirements and recommendations and shall be performed by personnel who are knowledgeable with the equipment and its requirements. When required by the equipment manufacturer or as noted in the specifications, equipment checkout and start-up shall be performed by personnel certified by the manufacturer. Evidence of proper certification of startup personnel shall be provided to the owner.
- B. All checkout and start-up activities are the responsibility of this contractor.
- C. This contractor shall notify FCPS two weeks prior to equipment checkout and start-up.
- D. Systems and equipment shall be operated at both full and part load conditions to ensure specified requirements can be achieved.
- E. The equipment manufacturer's checkout and start-up logs shall be completed in their entirety; should a reference be non-applicable it shall be marked as such. Copies of completed logs shall be submitted to FCPS personnel the day of checkout and start-up activities, as well as included in the Operation and Maintenance manual.

1.20 WARRANTY

- A. The contractor shall deliver the work described herein in a first-class operating condition in every respect. The contractor shall also warrant that the material, equipment and workmanship furnished shall be entirely free from defects for a period of one year. All apparatus will develop capacities and characteristics specified, and that if during the period of one year - from date of substantial completion (See Section 01740) any such defects in workmanship, materials or performance appear, he will, without cost to the Owner, remedy such defects within a reasonable time. In default thereof, Owner may have such work done and charge the cost to the contractor. In cases where equipment warranties

through the manufacturer exceed the periods listed in these specifications, the manufacturer's warranty shall take precedence. The contractor is responsible for all periodic service and maintenance required to maintain such warranties on completed work for the duration of the project (See Section 01740.1.05). Once the entire project is substantially complete, periodic maintenance shall be the responsibility of the owner.

1.21 CONNECTING INTO EXISTING UTILITIES

- A. **Procedures:** The procedures used for the accomplishment of connecting into existing work shall provide for safe conduct of the work, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services.
- B. **Scheduling of Work:** Work shall be performed in the sequence, locations and time periods agreed to by the Owner prior to commencement of work.
- C. **Dust Control:** The amount of dust resulting from connecting existing utilities shall be controlled to avoid creation of a nuisance in the surrounding area. Masks shall be worn for protection against dust inhalation by all persons in the vicinity of work involving removal of masonry.
- D. **Protection of Existing Work:**
 - 1. Existing work and furnishings to remain shall be protected from damage. Work damaged by the Contractor shall be repaired to match existing work without any additional cost to the Owner.
 - 2. Cover equipment as necessary, to protect it from dust.
 - 3. Floors shall be protected from damage.
 - 4. At the end of each workday and during inclement weather, close exterior openings with weatherproof cover.
 - 5. Provide temporary filter media on any portions of existing ductwork which communicate with corridors and construction areas. This media shall be checked frequently and changed as necessary.
- E. **Environmental Protection:** Contractor shall comply with all Federal and local regulations pertaining to Environmental Protection.
- F. **Removal of Existing Equipment and Materials:** Existing equipment and materials shall be dismantled and/or cut-up so as to be removable through existing building's access passages. No alterations to the building shall be made for the purpose of removing existing equipment and material.

G. Clean-up:

1. Debris and Rubbish: Remove debris and rubbish from the site daily. Do not allow to accumulate in building or on site.
2. Debris Control: Remove and transport debris in a manner so as to prevent spillage on site or adjacent areas.
3. Regulations: Local regulations regarding hauling and disposal shall apply.

1.22 DOWNTIME

- A. The contractor shall so arrange his work that domestic water, gas, storm sewer, sanitary sewer, air conditioning, and heating systems shall be maintained at all times while the school classes are in session.
- B. The contractor shall submit written requests to disconnect any existing utility services and to obtain equipment downtime. Only after receiving Owner approval of these requests shall work be allowed to proceed. This contractor shall be responsible for restoring the existing utilities.
- C. If contractor fails to provide domestic hot/cold water, gas, sewers, air conditioning and/or heating systems as specified herein it is understood and agreed that there will be liquidated damages deducted in the amount as stated in Division 01010, per school per consecutive calendar day.

1.23 CONSTRUCTION LIMITATIONS

- A. In renewal projects which require work to be continually done, above the corridor ceilings, while school is in progress. The following requirements shall be met:
 1. No construction material may be stored in a corridor at any time.
 2. Any work done in the corridors after school hours must allow a minimum corridor of 72" to remain for safe egress. No work such as welding, soldering, etc., which is considered hazardous to the occupants of the building, may take place during school hours.
 3. The contractor shall immediately clean any area of debris, if work is done in any occupied space.
 4. No gas-powered construction equipment will be allowed in the building during school hours.

END OF SECTION

SECTION 15050

BASIC MATERIALS AND METHODS

PART I - GENERAL

1.01 GENERAL

- A. The Bidding and Contract Requirements, Division 1 - General requirements and section 15010 - General Provisions, shall apply to this section.

1.02 SCOPE

- A. The work covered under this section covers the basic materials and methods for a complete mechanical system.

PART 2 - PRODUCTS

2.01 PIPE AND PIPE FITTINGS

- A. All materials shall be of an approved type and shall be designed for the pressures and temperatures at which they are to be operated, for the materials they are to handle and for their intended use.
- B. Materials shall conform to the standard reference numbers listed below. See individual sections of the specifications for use.
 - 1. Ductile Iron Water Pipe - (Water Service) - AWWA C151.
 - 2. Copper Tubing (Water Distribution - Type L or K) - ASTM B75, B88, B251
 - 3. Cast Iron Fittings – ASME B16.4, B16.12; ASTM A74, A888; CISPI 301
 - 4. Copper Fittings - ASME B16.15, B16.18, B16.22, B16.23, B16.26, B16.29, B16.32
 - 5. Cast Iron Soil Pipe - ASTM A74, A888; CISPI 301
 - 6. Copper Pipe (Waste, Vent, & Hydronic) - ASTM B42, B302
 - 7. Galvanized Steel Pipe (Waste & Vent) - ASTM A53
 - 8. Polyvinyl Chloride (PVC) Plastic Pipe - ASTM D2665, D2949
 - 9. Plastic Fittings - ASTM D2466, D2467, D2468, D3311, F409, F438, F439
 - 10. Concrete Pipe - ASTM C14, C76

11. Steel Pipe - ASTM A53, A106
12. Malleable Iron Fittings - ASME B16.3
13. Steel Butt Welding Fittings - ASME B16.9
14. Steel Fittings - ASTM A420
15. Gray Cast Iron Fittings - ASTM A126
16. Steel Pipe Flanges - ASME B16.5

2.02 PIPING SPECIALTIES

Piping Specialties shall be designed and installed to meet the intended use including pressures and temperature.

- A. Gaskets - Shall be full face with a working pressure of 300 lbs. and temperature up to 212 * F. Gaskets shall be manufactured by JM CLIPPER, US PIPE, FNW, or AMERICAN.
- B. Strainers - HONEYWELL-BRAUKMAN, ARMSTRONG or SARCO.
- C. Unions
 1. Unions shall be of an approved type, shall meet the requirements for the pressure and temperature at which they are to operate and shall be compatible with the pipe materials.
 2. Brass Couplings - Shall be used for connecting steel pipe to copper tubing.
 3. Die-electric unions or waterways shall not be permitted.
- D. Escutcheons - Escutcheon plates shall be stamped brass chromium plated, shall be of sufficient size to cover sleeved openings for the pipes, shall be of sufficient depth to cover sleeves projecting above floors, and shall be manufactured by BLATON AND CALDWELL, DEARBORN BRASS, MASON or GRINNELL.
- E. Gauges and Thermometers - Shall be as listed below unless otherwise specified under other sections of the specifications.
 1. Temperature Gauges or Thermometers - Shall be the separable socket, adjustable angle type, not less than 9" scale V-shaped, organic filled, blue reading column. Range shall be applicable for the service. Thermometers shall be adjustable type to permit easy reading from floor and outside of insulation, as manufactured by ASHCROFT, WEKSLER,

TAYLOR or TRERICE.

2. Pressure Gauges - Shall be of the liquid filled, bourdon-tube type with dial diameter not less than 4" and operating range 0 - 160 psig. Install a shut-off cock in line to each gauge. Gauges as manufactured by ASHCROFT, WEKSLER, TAYLOR or TRERICE.
3. Compound Gauges - Shall be of the liquid filled, bourdon-tube type with dial diameter not less than 4" and operating range 30" - 0 - 30 psig. Install a shut-off cock in line to each gauge. Gauges as manufactured by ASHCROFT, WEKSLER, TAYLOR or TRERICE.

2.03 PIPE HANGERS AND SUPPORTS

- A. Pipe Hangers and Supports Material - Provide a combination of pipe hangers and supports such as steel and copper clad clevis hangers, round steel rods, concrete inserts, clamps, brackets and other items as applicable. Hangers and supports shall meet the recommendations of the manufacturer. Parallel runs of horizontal piping shall be grouped together on adjustable trapeze hangers. All hangers in contact with copper pipe shall be copper-plated. Pipe hangers and support shall be of the size to accommodate the pipe and insulation where applicable. Pipe hangers and supports manufacturer: MASON, GRINNELL, CARPENTER AND PATERSON, ANVIL or NIBCO.
 1. VRF Pipe hangers and supports.
 - a. Multiple runs of VRF piping shall be grouped together on preformed U channel, (trapeze) hanger spacing and hanger rods as described below.
 - b. VRF piping shall be mounted to be preformed U channel with two-piece pipe straps (clamps) with cushioned insert. Klo-Shure 7 series Strut Mount Installation Couplings or approved equal.
 - c. The two-piece pipe straps (clamps) shall be sized to snugly fit the outside diameter of the pipe insulation.
 - d. Hangers shall be installed on each side of pipe direction changes and within 2 feet of each direction change.
 - e. Hangers for GelCopper pre-insulated copper tubing shall be Hydro-Zorb model TRH with 3/8 diameter rod or approved equal.
- B. Hanger Spacing for Horizontal Pipe shall not exceed:
 1. Cast Iron Soil Pipe (all diameters) 5'-0"

2.	Plastic Pipe (all diameters)	4'-0"
3.	Schedule 40 Steel Pipe	
	½" to 1" Pipe	6'-0"
	1-1/4" to 2" Pipe	8'-0"
	2-1/2" to 4" Pipe	10'-0"
	5" and Larger Pipe	12'-0"
4.	Type 'L' Copper Tubing	
	½" to ¾" Pipe	5'-0"
	1" Pipe	6'-0"
	1-1/4" Pipe	7'-0"
	1-1/2" to 2" Pipe	8'-0"
	2-1/2" Pipe	9'-0"
	3" Pipe	10'-0"
	3-1/2" Pipe	11'-0"
	4" Pipe	12'-0"
	5" Pipe	13'-0"
	6" Pipe	14'-0"

C. Hanger Spacing for Vertical Pipe shall not exceed:

Cast Iron Soil Pipe	At the base and at each story
Threaded Pipe	At each story
Plastic Pipe	At each story and at the midpoint between floors
Copper Tube	At each story

D. Hanger Rods shall be at least:

Pipe to 2"	3/8" diameter
2 1/2" to 3"	1/2" diameter
4" to 5"	5/8" diameter
6" to 8"	3/4" diameter
10" to 12"	7/8" diameter

E. Sheet Metal Saddles - Supports for insulated pipes shall not contact the pipe but shall surround the unbroken covering. Provide galvanized steel sheet metal saddles properly formed to the jacket between hanger and the lower 1/3 of the circumference. The size of the saddles shall be as follows:

Pipe to 3"	24-gauge x 12" long
4" to 6"	18-gauge x 12" long
8" and larger	16-gauge x 12" long

2.04 VALVES

- A. Valves shall be of an approved type and shall meet the requirements for the pressure and temperature at which they are to be operated, for the material they are to handle and for their intended use. Valve manufacturers are listed in the individual sections of the specifications.
- B. Valve and Tag Chart - Furnish and install on each valve a brass tag with a number and the abbreviation PLMB (for plumbing) HVAC (for mechanical systems) embossed in the brass tag for each valve and securely fastened to each valve wheel with beaded chain or brass wire. Provide a laminated chart in the water heater room, showing the locations and use of each valve. Laminating film shall be at least 10mil thick. Two charts shall be provided - one for the plumbing valves and one for the heating and cooling valves. The plumbing valves shall start with number 1 and continue consecutively until all plumbing valves are numbered. The heating and cooling valves shall start with number 1 and continue consecutively until all heating and cooling valves are numbered. A copy of the valve tag charts shall also be contained in the operation and maintenance manual.

2.05 ACCESS DOORS

- A. The contractor shall furnish access panels not smaller than 16 X 16" for access to concealed valves, traps, dampers, etc. where no other means of access is provided. Access panels shall be all steel construction with no. 16 gauge wall or ceiling and no. 14 gauge panel door with not less than 1/8" insulation secured to inside of the door. Doors shall be supported with concealed hinges and secured with suitable clips and countersunk flush screws. Outside of access panels shall be flush with finished wall or ceilings, except that where panels are located in acoustic tile or paneling, the door shall be recessed to receive adjacent finish material. The contractor shall determine the final position of each access door and the size to be used. Access panels shall be as manufactured by MILCOR. Fire ratings of access door shall not be less than the surface on which the door is installed. Where required by specifications locking access doors shall be fitted with a HL302 lock cylinder and key.

2.06 ELECTRIC MOTORS

- A. The contractor shall provide and install all electric motors for equipment furnished under Division 15. All motors shall be NEMA standard design for quiet operation. The motors shall be of ample size to operate at their proper load and full speed continuously without causing noise, vibration or temperature rise in excess of the rating. Provide high efficiency motors when called for on the drawings or hereinafter specified.
- B. Motors with belted drives shall be mounted in a manner to allow for belt adjustment. All belts shall be adjusted before turning project over to owner. All

motors with belt drives shall have belt guards.

2.07 ELECTRIC MOTOR STARTERS

The contractor shall furnish all motor starters complete with lugs sized to receive conductors specified and with accessories as required such as stop-start push button switches, hand-off-auto selector switches, pilot lights, remote switches, auxiliary contacts, transformers, relays, fuses and overload thermal units or heaters. Contractor coil voltage shall be 24 volts. All components are to be housed within enclosure.

- A. The motor starters shall be the type to meet the requirements of the motor and shall be in accordance with NEMA Standards, sizes and horsepower ratings. The starters shall be manufactured by SQUARE 'D', GENERAL ELECTRIC, CUTLER-HAMMER or SIEMENS.
- B. Three phase motors shall have across-the-line magnetic starter and single-phase motors shall have manual starters. The starters shall have NEMA 1 enclosures unless otherwise noted or required. Outdoor starters shall have weatherproof enclosures.
- C. The starter shall have an overload thermal unit in each phase conductor. The thermal units shall be sized as recommended by the manufacturer for full protection of the motor.
- D. All three phase motors and equipment with compressors shall be provided with three phase motor protectors as manufactured by DIVERSIFIED, SLM-ASE series (match voltage to corresponding model number). Unit shall include range plug, output fuse, output switch, line adjustment, status/trouble lights and adjustable/selectable operation with built-in time delays. Unit shall be U/L labeled. Protectors as manufactured by TIMEMARK #265 or MOTECTOR Power Guardian PLUS shall also be acceptable.

2.08 EQUIPMENT

- A. Equipment shall be furnished and installed as listed in the specifications or as required for a complete project.
- B. All equipment shall be new and shall bear the manufacturer's name and trade name. The equipment furnished under each section of the specifications shall be essentially the standard product of a manufacturer regularly engaged in the production of the required type of equipment.
- C. All three-phase equipment and equipment with compressors shall be provided with three phase motor protectors as manufactured by DIVERSIFIED, SLM-ASE series (match voltage to corresponding model number). Unit shall include range plug, output switch, line adjustment, status/trouble lights and adjustable/selectable operation with built-in time delays. Unit shall be U/L

labeled. Protectors as manufactured by TIMEMARK #265 or MOTECTOR Power Guardian PLUS shall also be acceptable.

- D. Nameplates/Labels – Provide engraved pin-attached laminated plastic nameplates for all pumps, air handling units, exhaust fans, boilers, chillers, fan powered heaters unit ventilators, fan coil units, blower coil units, terminal devices, VAV boxes, fire dampers, smoke detectors and roof mounted equipment. Where equipment is located above the ceiling, nameplates shall be mounted on the ceiling below the device. Exhaust fans located on the roof will require two separate nameplates; one is to be attached to the fan, the other on the ceiling grid directly below the fan. Each nameplate shall identify the item served, such as "PRV-2." or "SMOKE DETECTOR AHU-1" Laminated plastic shall be one eighth (1/8) thick, black with white center core, exception: fire damper nameplates shall be red with white center core. Nameplates shall be a minimum of one inch by three inches, with minimum one-quarter inch high block lettering. Adhesive backed, embossed lettering tape is not acceptable. Exhaust grilles or registers in each space shall be labeled. Each label shall identify the exhaust fan serving this grille or register, such as "PRV-2". Identification labels shall be BROTHER type "P-TOUCH", clear tape with upper case letters, minimum ¼ inch high block lettering, and black printing and shall be located on the ceiling grid next to the grille or register.

PART 3 - EXECUTION

3.01 PIPE, FITTINGS AND JOINTS

A. Pipe and Fittings

1. Pipe, fittings and specialties stored at the job shall be stored in such a manner as to prevent dirt and moisture from collecting in the material. Openings in the piping system during construction shall be protected at all times from foreign matter entering the piping system. PVC piping shall not be stored in direct sunlight.
2. Installation - The piping shall be installed complete and shall be of the size required by code. When a size is not indicated or is in conflict with other drawings, the contractor shall request the pipe size from the engineer. All piping shall be cut accurately from dimensions established at the project site and allowances shall be made for the clearance of windows, doors and other openings. No part of the building structure may be cut to allow for the installation of piping unless specifically approved in writing.
3. All piping shall be installed parallel or perpendicular to the building construction and shall be installed so as to allow for expansion and drainage. Due to the small scale of the drawings, it is not possible to

show all elbows and swing joints required to allow for expansion; however, the contractor shall install three elbow swing joints at all runouts and other connection to mains.

4. Install continuous galvanized sheet metal drip pan under all water piping passing through all rooms with electrical equipment such as electrical, elevator equipment and transformer rooms and all other spaces provided primarily for the installation of electrical equipment. Drip pan shall be channeled out of the space and be extended to the closest drain.
5. Eccentric reducing fittings or eccentric reducing couplings shall be installed to bring top of mains in line and prevent pockets. Eccentric fittings will not be required on water mains. Ends of pipes shall be reamed out before being installed.
6. Pipe Sleeves
 - a. Pipe sleeves shall be installed on all pipes passing through walls, ceilings and floors except floor slabs on grade. On insulated pipes the sleeves shall be large enough to pass the insulation without damaging the vapor barrier. The ends of the sleeves shall extend 1/2" above the finished floor and made watertight around sleeve. Where pipes pass through fire rated floors and wall the space between the pipe and the sleeve shall be fire stopped and smoke stopped with the appropriate U.L. rated assembly. Sleeves not in contact with the earth shall be schedule 40 black steel pipes, except sleeves in poured concrete slabs above grade may be a manufactured pipe sleeve. PVC sleeves shall not be used in plenum spaces.
 - b. Pipe Sleeves in contact with the earth shall be cast iron. The space between the pipe and the cast iron pipe sleeve shall be packed with oakum with a lead joint and made watertight. The pipe passing through and under footings and wall below grade shall have cast iron sleeves. The sleeves not entering the building need not be watertight.

B. Piping Joints

1. Screwed Joints - Screwed joints shall be made with full cut American Standard Pipe Thread. All pipes shall be reamed to full diameter of the pipe. Pipe thread compound shall be applied to the male thread only.
2. Welded Joints
 - a. Welded joints for steel pipe 2 1/2" and larger shall be made in accordance with the procedure standard in the American

Standards Association piping code, and before assigning any welder to work covered, the contractor shall provide for the approval of the name(s) of pipe welders to be employed in the work, together with certification that each of these welders has passed qualification tests as prescribed by the National Certified Pipe Welding Bureau or by other reputable testing laboratory or agency using procedures approved by the ASME or American Welding Society. The contractor shall use only approved factory manufactured welding type fitting for the intersection welding or branching to mains. Valves and specialties shall have screwed or flanged joints.

- b. Welding tees, ells, reducers and caps shall be of wrought or forged construction similar to those manufactured by TUBE TURNS, INC. In lieu of wrought or forged welding tees for branch outlets, weldolets or welding nipples may be used; provided, first that the nipples are accurately coped in the shop to fit the pipes and leveled for field welding; and provided, second that openings in the walls of pipes are cut to full inside diameter of the nipples; and third, that the outlet diameter shall be less than 3/4 the diameter of the main.
 - c. For connections on welded piping to valves 2 1/2" and over and that of other accessories required to be flanged, weld neck or slip-on companion flanges shall be used. The flange face shall be in every case perpendicular to the axis of the pipe valve.
3. Solder Joints - the solder joint above grade shall be made, unless otherwise noted, with 95/5, lead free solder using approved flux. All underground joints and refrigeration joints shall be made with an approved silver bearing solder. Cut pipe shall be reamed to full diameter. Copper to steel pipe shall be made with proper fittings.
 4. Cast Iron Pipe Joints - for bell-and-spigot soil pipe the joint shall be firmly packed with oakum and filled with molten lead not less than 1" deep and not to extend more than one-eighth inch below the rim. The use of a neoprene gasket when installed in accordance with the manufacturer's recommendations is also acceptable.
 5. Concrete Pipe Joint - Shall be bituminous joint compound or a cement plaster installed in accordance with the manufacturer's recommendations. Joints firmly packed with oakum and filled with a concrete mortar, which shall extend mortar to 3" beyond the hub, shall also be acceptable. All joints shall be made with precast concrete fittings.
 6. Flanged joint - The flanged joint shall be made with the proper number and size of bolts and with the proper gasket between the flanges.

7. Plastic Pipe Joints - Shall be made with solvent as recommended by the pipe manufacturer.

3.02 PIPE SPECIALTIES

- A. Pipe specialties shall be installed as indicated in the specifications and as required to make a complete system.
- B. Escutcheon Plates shall be mounted on all exposed pipes extending through wall, floor, ceiling or cabinet bases. On insulated pipes the escutcheon shall be on the outside of the insulation.
- C. Pressure and Compound Gauges shall be installed with shut-off cock in the line to each gauge.

3.03 PIPE HANGERS AND SUPPORTS

- A. All pipes shall be supported from the building structure, and wherever possible, parallel runs of horizontal piping shall be grouped together on adjustable trapeze hangers. Single runs of horizontal piping shall be supported with clevis type hangers. The hangers shall be on the outside of the insulation. Vertical risers shall be supported at each floor line with steel pipe clamps. All hangers in contact with copper pipe shall be copper plated. The use of wire or perforated metal to support pipe will not be permitted. In no case shall copper pipe be in contact with a ferrous metal.
- B. The pipe hanger spacing and support shall be as listed under 2.03 in this section.
- C. Where piping is supported from the steel, the support shall be attached at the top of the steel. Attachments shall be made either by welding or using top beam clamps.
- D. Any supplemental steel required between building structural members shall be provided by this contractor.

3.04 VALVES

- A. The contractor shall install valves where indicated on the drawings and where required for adequate control of the system. Provide shut-off valves at the base of the risers and main branches at points of take-offs from the supply or return mains. Branches shall be considered main branches when they serve three or more units or fixtures. Provide valves necessary to isolate each piece of equipment separately from the remainder of the system. Valves shall be installed in accessible locations. Allow isolation for inspection, maintenance and repair of each piece of equipment and each service loop. Provide valves to allow for the phasing of work where required. Valve size shall be the same as the pipe size except for control valves.

- B. Valves shall be installed with their stems in an upright or horizontal position. Stems shall not be inverted.
- C. After approval of a particular valve, this type valve shall be used throughout the project. Do not mix styles or manufacturers.
- D. Ball valves shall be provided with a 2" extended handle of a non-thermal conductive material and shall include a protective sleeve that allows operation of the valve without breaking the vapor seal or disturbing the insulation. Extended handle shall be internally insulated.

3.05 ACCESS DOORS

- A. Install hinged and lock type access doors as required for operation and maintenance of equipment. The access doors shall be installed so that they maintain the rating integrity of the material in which they are mounted. Those with an exposed surface in a finished area shall be flush with the finished material with a recessed space for installation of flush matching materials when in panel or acoustical tile.

3.06 ELECTRIC MOTORS

- A. Electric motors shall be supplied with equipment furnished under Division 15. All moving parts shall be protected as required by OSHA.

3.07 ELECTRIC MOTOR STARTERS

- A. Electric motor starters and accessories shall be installed under Division 16.
- B. Three phase motor protectors shall be installed in accordance with manufacturers' recommendations and installation instructions. Unit shall be selected for voltage specified.

3.08 EQUIPMENT

- A. The contractor shall receive and properly store the equipment pertaining to the mechanical work. The equipment shall be tightly covered and protected against dirt, water, chemical or mechanical injury and theft. The manufacturer's directions shall be followed completely in the delivery, storage, protection and installation of all equipment and materials.
- B. The contractor shall provide and install all items necessary for the complete installation of the equipment as required by code without additional cost to the owner, regardless of whether the items are covered in the specifications. Such items could be - but are not limited to: concrete pad, supports, vibration eliminators, additional piping and valves, motor controllers, relief valves and piping, insulation, electrical wiring, lubrication, refrigerants and start-up and

service.

- C. It shall be the responsibility of the contractor to clean the equipment, make necessary adjustments and place the equipment into operation before turning equipment over to the Owner. Any paint that was scratched during construction shall be touched-up with factory color paint. Any items that were damaged during construction shall be replaced.
- D. Where equipment is supported from the steel, the support shall be attached at the top of the steel. Attachments shall be made either by welding or using top beam clamps.
- E. Three phase motor protectors shall be installed in accordance with manufacturer's recommendations and installation instructions. Unit shall be selected for voltage specified. Motor protectors shall be installed prior to start-up.
- F. Permission for the use of new HVAC equipment to be used as a method for providing temporary heating or cooling shall be at the discretion of the owner. The use of new HVAC equipment for temporary heating or cooling shall not modify the terms of the warranty nor shall it constitute substantial completion or beneficial use. The mechanical contractor is responsible for providing a dust free HVAC system and shall correct all equipment or system damage caused by construction operations. New HVAC equipment used for temporary heating or cooling shall have the filters changed on a regular basis or as directed by the owner and prior to turning over equipment for permanent operation. The spare filters provided by the specifications shall not be used for this purpose. The equipment fan belts shall be inspected for excessive wear and replaced as directed by the owner. The equipment cooling coils, condensing coils, heat exchangers, energy recovery devices and associated ductwork shall be inspected for cleanliness and cleaned as directed by the owner, to a level satisfactory to the owner which may include this work to be done by an independent third-party contractor at this contractors expense.
- G. The mechanical contractor shall set all outside air dampers to the approximate minimum position during equipment installation and prior to the start-up of equipment.
- H. The installer shall be responsible for providing and installing new fan or motor sheaves and belts when required to obtain the designed airflow.

END OF SECTION

SECTION 16010

ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. It is the intent of this Specification that this Contractor furnish and install all material, labor, equipment, apparatus, tools, transportation, and other incidentals required for the project.

1.02 REQUIREMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this Section.
- B. Provisions of this Section apply to each and every Section of this Division.

1.03 SCOPE

- A. It is the intention of these Specifications and the Contract Drawings to call for finished work, tested and ready for operation.
- B. Any apparatus, appliances, materials, or work not indicated but mentioned in these Specifications, or vice versa, or any incidental accessories necessary to make the work complete and perfect in all respects and ready for operation, even if not particularly specified, shall be furnished, delivered, and installed by this Contractor at no additional expense to the Owner.
- C. Minor details not usually shown or specified, but necessary for the proper installation and operation shall be included the same as if herein specified or shown on the Drawings.
- D. With submission of bid, this Contractor shall give written notice to the Architect/Engineer of any materials or apparatus believed: inadequate or unsuitable; in violation of federal, state, and local laws, codes, and ordinances, including Fairfax County's electrical inspection rules or regulations; and any necessary items of the work which have been omitted. In the absence of such written notice, it shall be mutually agreed that the Contractor has included the cost of all required items in the proposal and that the Contractor shall be responsible for the approved satisfactory functioning of the entire electrical system and low voltage electrical systems at no additional expense to the Owner.

1.04 APPLICABLE SPECIFICATIONS, CODES, STANDARDS, AND PERMITS

- A. Materials, equipment, and installation shall be in accordance with the

requirements of the latest adopted editions of the National Electrical Code (NEC), the Virginia Uniform Statewide Building Code, and these Specifications.

- B. Unless otherwise specified herein the work and material shall conform to the applicable requirements of the (latest editions or currently adopted) following codes, standards, and regulations:
1. American National Standards Institute (ANSI).
 2. Americans with Disabilities Act Code of Federal Regulation (ADA).
 3. Canadian Standards Association (CSA).
 4. Electronic Industries Association / Telecommunications Industry Association (EIA/TIA)
 5. Fairfax County Fire Marshal's Office.
 6. Illuminating Engineering Society (IES).
 7. International Building Code (IBC)
 8. International Code Council (ICC)
 9. National Electrical Code (NEC).
 10. National Electrical Contractor's Association (NECA).
 11. National Electrical Manufacturer's Association (NEMA).
 12. National Fire Protection Association (NFPA).
 13. Occupational Safety and Health Association (OSHA).
 14. Underwriters Laboratories, Inc. (UL).
 15. Virginia Occupational Safety and Health Program (VOSH).
 16. Virginia Uniform Statewide Building Code (VUSBC).
- C. All electrical materials and equipment shall be new, listed by UL, and bear the UL label. This applies to all equipment for which UL standards have been established and label service is regularly furnished.
- D. Equipment not UL (or other testing agencies recognized by VUSBC) labeled and equipment assembled in the field using UL components and not UL labeled as an "assembly", for which standards have not been promulgated, shall be accepted

upon certification by A.B.M. ELECTRICAL POWER SOLUTIONS (MET ELECTRICAL TESTING), LLC, 4390 Parliament Place, Suite Q, Lanham, MD 20706 telephone: 240-487-1900 or ELECTRICAL TESTING CORPORATION, 1701 Edmondson Avenue, #201, Baltimore, Maryland, 21228, telephone 410-526-4700. Cost of such certification shall be included in the base bid and in each quoted cost for alternates and proposed change orders. Electrical equipment that requires certification shall be tested by this Contractor at no additional cost to the Owner.

- E. Workmanship shall conform to the "Standard of Installation" published by the NECA. This Contractor shall provide a minimum of one (1) valid licensed journeyman electrician (Foreman) to be present at all times while work is being performed. License shall be issued by the Commonwealth of Virginia. Such certification shall be provided to the Architect/Engineer upon request.
- F. This Contractor shall: give all necessary notices; obtain all permits (including a low voltage wiring permit); pay all government taxes, fees, and other costs including, but not limited to the Fairfax County Fire Marshals Office shop drawing review fees; file all necessary plans; prepare all documents; and obtain required certificates of inspection for work and deliver same to the Architect/Engineer before any request for acceptance and final payment for the work.
- G. This Contractor shall be responsible for purchasing equipment and appliances that bear the label of an agency as approved by the Fairfax County Department of Public Works and Environmental Services (DPWES). It shall be the responsibility of the Contractor to pay for any label testing of equipment or appliances that are installed without the label of a DPWES approved agency.

1.05 CONTRACTOR'S WARRANTY

- A. This Contractor shall warrant the workmanship, materials, and equipment against defects and/or non-operation as described in SECTION 01740 WARRANTIES AND BONDS.

1.06 COOPERATION WITH OTHER TRADES

- A. This Contractor shall give full cooperation to other trades and shall furnish in writing to the Architect/Engineer any information necessary to permit the work of all trades to be installed satisfactorily with the least possible interference or delay.
- B. Where the work of this Contractor will be installed in close proximity to work of other trades, or where there is evidence that work shall interfere with the work of other trades, this Contractor shall assist in working out space conditions to make a satisfactory adjustment. This Contractor shall prepare composite working drawings at a scale not less than 1/4 inch equals 1'-0", clearly showing how the work is to be installed in relation to the work of the

other trades. If this Contractor installs the work before coordinating with other trades or as to cause any interference with work of other trades, this Contractor shall make necessary changes to the work to correct the condition at no additional expense to the Owner.

- C. This Contractor shall furnish to other trades, all necessary templates, patterns, setting plans, and shop details for the proper installation of the work and for the purpose of coordinating adjacent work.

PART 2 - PRODUCTS

2.01 STANDARD PRODUCTS

- A. Unless otherwise shown on the Drawings or herein specified, each item of equipment furnished by this Contractor shall be essentially the standard product of the manufacturer. Where two (2) or more equipment items of the same kind or class or equipment are required, they shall be the product of a single manufacturer.
- B. For equipment consisting of an assembly of multiple components, such multiple components do not have to be the products of a single manufacturer.

2.02 PERFORMANCE DATA

- A. All performance data specified herein shall be considered actual performance of equipment as installed. If installation details are such that actual operating conditions unfavorably affect performance as compared to conditions under which the equipment was rated, suitable allowance shall be made by this Contractor.

2.03 QUIET OPERATION

- A. All equipment, including the emergency engine generator set, shall operate under all conditions of load without transmission of sound and/or vibration which is found to be objectionable in the opinion of the Architect/Engineer. In case of sound or vibration noticeable outside of the room or space in which it is installed, or annoyingly noticeable inside its' own room or space, it shall be considered objectionable. Sound or vibration eliminators as recommended to eliminate any objectionable sound or vibration shall be furnished and installed by this Contractor if deemed necessary by the Architect/Engineer.

2.04 ELECTRICAL WORK

- A. All electrical motors for plumbing and mechanical equipment shall be furnished and installed under Division 15.
- B. All starters and phase failure relays required for equipment shall be furnished

under Division 15 and shall be installed and wired under this Division of these Specifications.

- C. All other electrical devices such as variable frequency drives (VFD), pushbutton stations, selector switches, flow switches, pilot lights, thermostats, etc., for the control or operation of mechanical and plumbing equipment shall be furnished and installed under Division 15. These items shall comply with all Sections of this Division of these Specifications.
- D. In all cases where VFD's or starters are actuated by automatic controls or other devices specified, all necessary components to actuate VFD's or starters shall be furnished and installed under Division 15.
- E. Wiring for automatic temperature control and boiler emergency shut-off shall be furnished and installed under Division 15. All other line voltage control wiring, including interlock wiring for equipment, shall be furnished and installed under this Division unless otherwise noted.
- F. Power supply wiring for all equipment shall be furnished and installed under this Division of these Specifications.
- G. This Contractor shall coordinate with Division 15 for wiring of approved equipment and shall coordinate specified control functions.
- H. This Contractor shall install all starters furnished under Division 15, and provide all wiring from the power source, through the starter, to the motor. Starters shall not be located above ceilings or other concealed locations. If locations are not shown on the Drawings, this Contractor shall locate starters in utilitarian locations such as electrical rooms, janitor closets, etc., as approved by the Architect/Engineer.
- I. This Contractor shall provide all power wiring for VFD's from the power source, through the VFD, to the motor.
- J. This Contractor shall make final power connections to all items of equipment and electrical heat furnished under Division 15.

2.05 PLATES AND SLEEVES

- A. All electrical system conduit shall have sleeves for passing through slabs except concrete slabs in contact with grade. All conduit 1-1/2 inch and larger shall have sleeves where the conduit passes through masonry, concrete, tile, and gypsum wall construction. Conduit passing through concrete slabs on grade shall not require sleeves.
- B. This Contractor shall furnish and install sleeves in exterior walls below grade for conduits and, the space between the conduit and the sleeve shall be packed with

silicon and made completely watertight.

- C. This Contractor shall fasten sleeves securely in floors and walls so that they will not become displaced when concrete is poured or when other construction is built around them. This Contractor shall take precautions to prevent concrete, plaster, or other materials from being forced into the space between the conduit and sleeve during construction.
1. This Contractor shall terminate sleeves flush with walls, partitions, and ceilings.
 2. In areas where conduits are concealed, this Contractor shall terminate sleeves flush with the floor.
 3. In finished areas, where conduits are exposed, this Contractor shall terminate sleeves below the floor and cap. In rooms having floor drains, this Contractor shall extend sleeves 3/4 inch above the floor.
- D. Escutcheon plates shall be furnished and installed by this Contractor for all exposed conduits passing through walls, floors, and ceilings. Plates shall be nickel-plated, of the split ring type, and of a size to match the conduit. Where plates are provided for conduits passing through sleeves that extend above the floor surface, this Contractor shall furnish and install deep recessed plates to conceal the sleeves.
- E. Sleeves shall be constructed of galvanized rigid steel conduit unless otherwise indicated on Drawings.

2.06 FOUNDATIONS FOR EQUIPMENT

- A. The Contractor shall construct reinforced concrete foundations for floor mounted equipment where indicated on the Drawings. Foundations generally shall be built up from structural floor slabs and shall be made of 3000 psi concrete four (4) inches thick unless otherwise indicated or specified. Top edges shall be beveled. All exposed surfaces shall be finished with cement mortar troweled smooth. Reinforcing shall be 6 x 6-10/10 welded wire mesh.
- B. This Contractor shall provide reinforced concrete pole base foundations of either the cast-in-place or precast type for the exterior site lighting poles. The poles bases shall be sized and made of 3000 psi, air entrained, concrete with reinforcing as detailed on the Drawings. The top edges of the bases shall be beveled (chamfered) by using the proper type mold, not by grinding the edge once the concrete has set. All exposed surfaces shall be finished smooth without leaving any of the forms imperfections.
1. Cast-in-place concrete pole base foundations shall require this Contractor to provide all excavation and forms.

- C. Equipment shall be secured to foundations by this Contractor with anchor bolts embedded in the concrete of ample size and proper arrangements to suit equipment furnished.

PART 3 - EXECUTION

3.01 INSTALLATION OF WORK

- A. This Contractor shall examine the site and all Drawings before proceeding with the layout and installation of this work.
- B. This Contractor shall arrange the work essentially as shown on the Drawings, exact layout shall be made on the job to suit actual conditions. This Contractor shall confer and cooperate with other trades on the job so all work shall be installed in proper relationship. Precise location of parts to coordinate with other work shall be the responsibility of this Contractor.
- C. This Contractor shall arrange for required sleeves and openings. This Contractor shall be liable for cutting or patching made necessary by failure to make proper arrangements in this respect.
- D. This Contractor shall provide a full time Job Foreman who shall oversee and coordinate the work with other trades and make proper layout of the work to suit the job conditions and to satisfy the general requirements of the Contract.

3.02 DELIVERY AND STORAGE

- A. All materials and equipment shall be delivered in the manufacturer's original packages with seals unbroken and with manufacturer's name and contents legibly marked thereon. This Contractor shall store all materials off the ground, under cover, and protected from the weather and construction.

3.03 SCAFFOLDING, RIGGING, AND HOISTING

- A. Unless otherwise specified, this Contractor shall furnish all scaffolding, rigging, hoisting, shoring, and services necessary for the erection and delivery into the premises of any equipment and apparatus furnished and removal of same from premises when no longer required.

3.04 EXCAVATING AND BACKFILLING

- A. Mass excavation to approximate building level shall be carried out under DIVISION 1 of these Specifications. This Contractor shall do all trench and pit excavation and backfilling required for the electrical work inside and outside the building, including: repairing of finished surfaces; all required shoring, bracing, pumping; re-stripping; and all protection of safety of persons and property. The

method of backfilling shall conform to the requirements of Fairfax County. In addition, it shall be the responsibility of this Contractor to check the indicated elevations of utilities entering and leaving the building. If such elevations require excavations lower than the footing levels, the Architect/Engineer shall be notified of such conditions and redesign shall be made before excavations are commenced. It shall also be the responsibility of this Contractor to make the excavations at the minimum required depths in order not to undercut the footings.

- B. Conduits installed below the ground floor level shall have the bottom of the trench excavated to grade so that the conduit shall rest on a solid bed of undisturbed earth. If rock is encountered, the trench shall be excavated to not less than three (3) inches below required grade and filled to required grade with sand so as to provide a solid bed under the entire length of conduit.
- C. Where the trench is excavated below the required depth, the trench shall be filled with sand and fine gravel so that the entire length of conduit rests on solid bed of sand.
- D. Backfilling to one (1) foot above the top of the conduit pipe shall be done by hand, using clean dirt free of rocks or other debris. All backfill shall be properly compacted in accordance with DIVISION 2 of this Specification. Utility tracing tape shall be placed by this Contractor above underground electrical work approximately one (1) foot below finished grade for the entire length of the installation.

3.05 ACCESSIBILITY

- A. This Contractor shall be responsible for the sufficiency of the size of shafts and chases, the adequate thickness of partitions, and the adequate clearance in double partitions and hung ceilings for the proper installation of the work. This Contractor shall cooperate with all other trades whose work is in the same space and shall advise each trade of their requirements. Such spaces and clearances shall, however, be kept to the minimum size required.
- B. This Contractor shall locate all equipment that must be serviced, operated, or maintained in fully accessible positions. This equipment shall include, but not be limited to, disconnect switches, panelboards, transformers, controllers, switchgear, motor control centers, generators, junction boxes and pullboxes, and the like. If required for better accessibility, this Contractor shall furnish access doors or panels for this purpose. Minor deviations from the Drawings may be made to allow for better accessibility, and all changes shall be approved by the Architect/Engineer.
- C. This Contractor shall furnish and install access panels as required for access to junction boxes, etc. The panels shall be twelve (12) inches square, unless otherwise required to be larger, with hinged metal door and metal frames. Door and frame shall be not lighter than sixteen (16) gauge sheet steel. Access

panels shall be the flush type with screwdriver latching device. The frame shall be constructed so that it can be secured to the building material. Access panels and their locations shall meet with the approval of the Architect/Engineer.

3.06 DEMOLITION

- A. This Contractor shall perform all demolition work as shown on the Drawings and specified herein.
- B. The procedures used for the accomplishment of demolition work shall provide for safe conduct of the work, careful removal and disposition of material specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services.
- C. Work shall be performed in sequence, locations, and time periods as agreed to by the Owner prior to commencement of work.
- D. The amount of dust resulting from demolition shall be controlled to avoid creation of a nuisance in the surrounding area. Masks shall be worn for protection against dust inhalation by all persons in the vicinity of work involving removal of masonry.
- E. Protection of existing work:
 - 1. Existing work and finishes to remain shall be protected from damage. Work damaged by this Contractor shall be repaired to match existing work at no additional expense to the Owner.
 - 2. This Contractor shall cover equipment as necessary to protect it from dust.
 - 3. Floors shall be protected by this Contractor from damage.
 - 4. At the end of each workday and during inclement weather, this Contractor shall close exterior openings with weatherproof covers.
 - 5. At the end of each workday this Contractor shall broom clean the entire project.
- F. This Contractor shall comply with all Federal and local regulations pertaining to environmental protection.
- G. Existing equipment and materials shall be dismantled and/or cut-up so as to be removable through existing access passages. No alterations to the building shall be made for the purpose of removing existing equipment and material.
- H. All equipment removed shall remain in the property of the Owner and shall be

stored or disposed of as directed.

I. Clean-up:

1. This Contractor shall remove debris and rubbish from the site. Do not allow to accumulate in building or on site.
2. This Contractor shall remove and transport debris in a manner so as to prevent spillage on site or adjacent areas.
3. Local regulations regarding hauling and disposal shall apply.

J. Modifications to Existing Electrical Systems:

1. This Contractor shall ensure that all demolition and modifications to existing electrical systems and associated equipment shall be by a qualified electrician.
2. This Contractor shall remove such existing work as called for on the Drawings and/or as required to clear the areas for new construction. Remove each item of equipment, devices including low voltage devices, luminaires (lighting fixtures), etc. and it's associated circuitry back to the source of power (switchboard, panelboard, controller, control panel, equipment rack, etc.). Associated circuitry includes conduit, conductors, boxes, wiring devices, coverplates, lamps, ballasts, wireways, switches, starters, etc. which are associated with the item being removed.
3. Except as otherwise noted on the Drawings, all existing electrical work which will not be rendered obsolete and which may be disturbed due to any changes required under this Contract shall be restored to it's original operating condition. Contractor shall make all necessary provisions to maintain ALL electrical systems, including communications and other low voltage systems, by extending wiring, conduit, relocating equipment, installing new temporary equipment and/or wiring, etc.
4. Electrical work or material rendered obsolete shall be abandoned where concealed in walls and floor slabs and removed where exposed, and/or where made exposed by the removal of walls and/or ceilings. Where a concealed conduit is abandoned and the terminated end is exposed above an accessible ceiling the end shall be capped or sealed in an approved manner. Where a concealed abandoned conduit is terminated in a finished space the conduit shall be removed to below the finished surface (minimum three inches for concrete floor slabs) and the void filled with non-shrinking grout and finished to match the surrounding surfaces.
5. Unused flush device outlet boxes or junction boxes shall be provided with blank coverplates.

6. Where equipment is identified or required to be relocated its associated circuitry shall also be removed, as herein before described, along with it's associated devices, etc. Provide all electrical connections to the relocated equipment to new or extended circuitry as indicated on the Drawings and/or required to make the equipment fully functional.
7. Power, communications and other low voltage systems that will be reconnected or extended permanently or temporarily shall be identified and marked above the ceiling during the demolition and phased construction periods.
8. Where existing electrical work interferes with new work, and where such installations are to remain in use, the installation shall be disconnected and/or reconnected to coordinate with the work indicated on the Drawings and as herein specified.
9. Except as otherwise indicated, panelboard cabinets shall not be used for other purposes than circuit protection and distribution points and shall not be used as junction or pullboxes.

3.07 CUTTING AND PATCHING

- A. All cutting and patching of existing construction required for work under this DIVISION of these Specifications shall be performed by this Contractor in accordance with SECTION 01045 CUTTING AND PATCHING.

3.08 PERSONNEL INSTRUCTION AND OPERATING INSTRUCTIONS

- A. This Contractor shall furnish to the Architect/Engineer for delivery to the Owner, four (4) bound and indexed copies of an approved operations and maintenance instruction booklet along with a copy of the submittal data for each item of equipment installed under this Contract. The submittal data shall include all low voltage "special systems" drawings and floor plans, updated to include any deviations to the system(s) and/or the building layout to properly reflect "as built" conditions.
- B. After all tests are conducted and approved as specified below, this Contractor shall furnish a competent operations engineer for a period of two (2) days to instruct and demonstrate to the Owner, or his authorized representative, the operation of each system. This Contractor shall notify the Architect/Engineer in writing of the person to whom this instruction was given and the date given. This Contractor shall provide at least one (1) week's notice to the Owner when conducting tests or demonstrations of equipment.
- C. This Contractor shall furnish to the Owner as part of the Owner's operating and personnel instruction package, one (1) bound set of marked up drawings indicating any changes made during construction to the original contract

drawings. The set shall be clearly labeled, "As Built Plans."

- D. This Contractor shall furnish complete Technical Service Manuals with component schematics and parts lists as indicated in appropriate section for each system.

3.09 TESTS

- A. This Contractor shall, at his expense, conduct a capacity and general operating test on each system. The test shall demonstrate the specified capacities of the various pieces of equipment and shall be conducted in the presence of the Architect/Engineer and the Owner. The general operating tests shall demonstrate that the entire equipment system is functioning in accordance with the Drawings and Specifications. This Contractor shall furnish all instructions, test equipment, and utilities.
- B. After all systems are completely tested, this Contractor shall submit four (4) copies of the test results to the Architect/Engineer for review. Final inspection shall not be made until test results have been reviewed by the Architect/Engineer.

3.10 CLEANING

- A. This Contractor shall thoroughly clean all electrical equipment installed under this DIVISION of these Specifications after the system has been completed or used for temporary service, but in any case prior to final inspection by the Owner's representatives.
- B. Cleaning shall include, but not be limited to, luminaires (lighting fixtures), wiring devices, cover plates, distribution equipment, and the like.

3.11 GUARANTEE

- A. This Contractor shall guarantee by acceptance of the contract that all work installed shall be free from any and all defects in workmanship and/or materials, and that all apparatus shall develop capacities and characteristics specified, and that if during the phased construction and warranty period such defects in workmanship, materials, or performance appear, this Contractor shall with no additional expense to the Owner, remedy such defects within a reasonable time. In default thereof, Owner may have such work done and charge the cost to this Contractor.

3.12 IDENTIFICATION

- A. This Contractor shall refer to the appropriate sections of these Specifications for identification requirements for junction boxes, branch and feeder conductors, underground wiring, low voltage special systems wiring and the like.

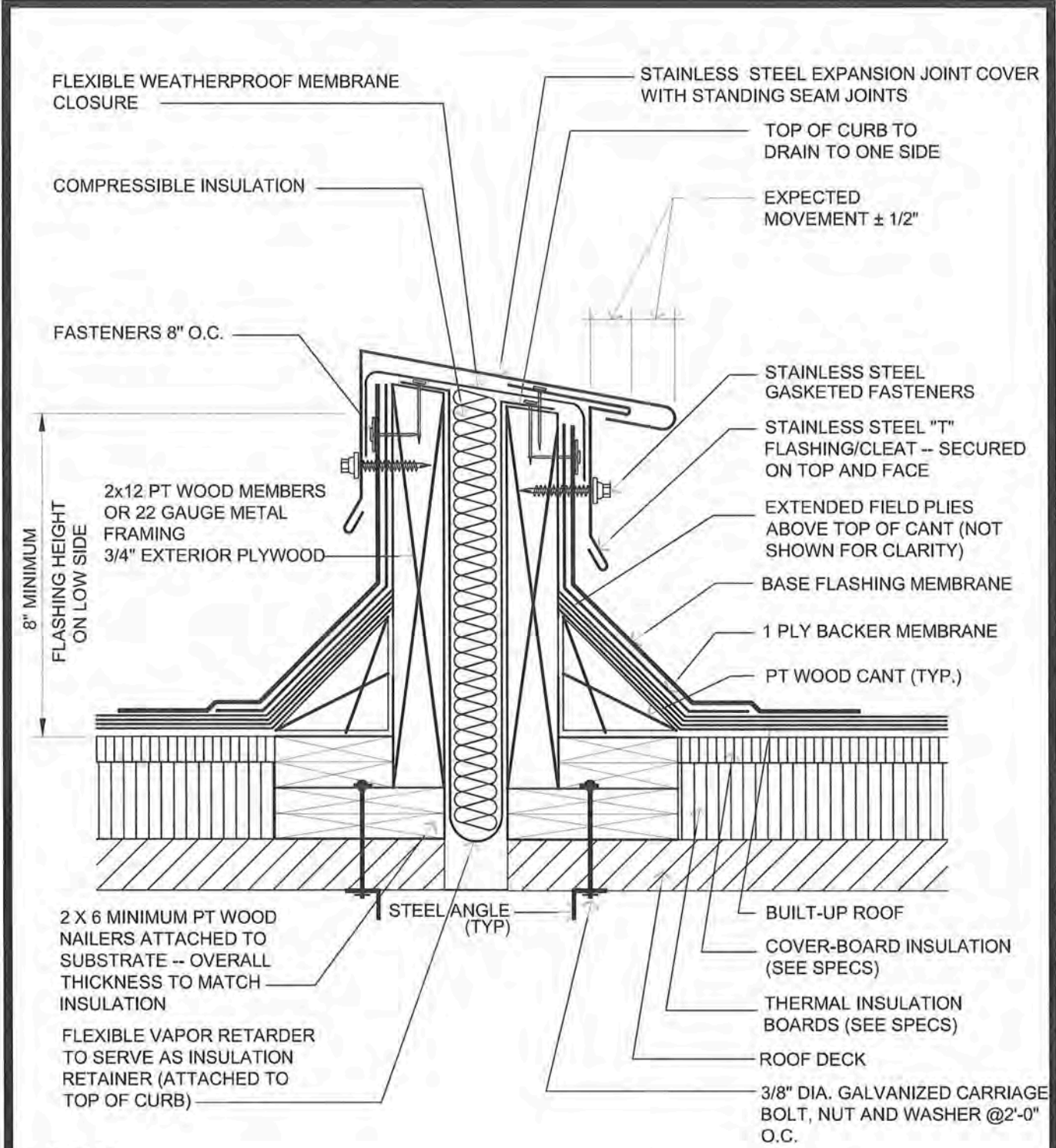
3.13 LOCK-OUT/TAG-OUT PROCEDURES

- A. This Contractor shall have an established lock-out/tag-out procedure which meets the requirements of VOSH Standard 29 CFR Part 1910, Subpart J, Subsection 147, entitled "Control of Hazardous Energy Sources". This Contractor shall coordinate with the Owner's representative to insure conformance with the Owner's lock-out/tag-out program requirements.

END OF SECTION

DIV. 7 - THERMAL & MOISTURE

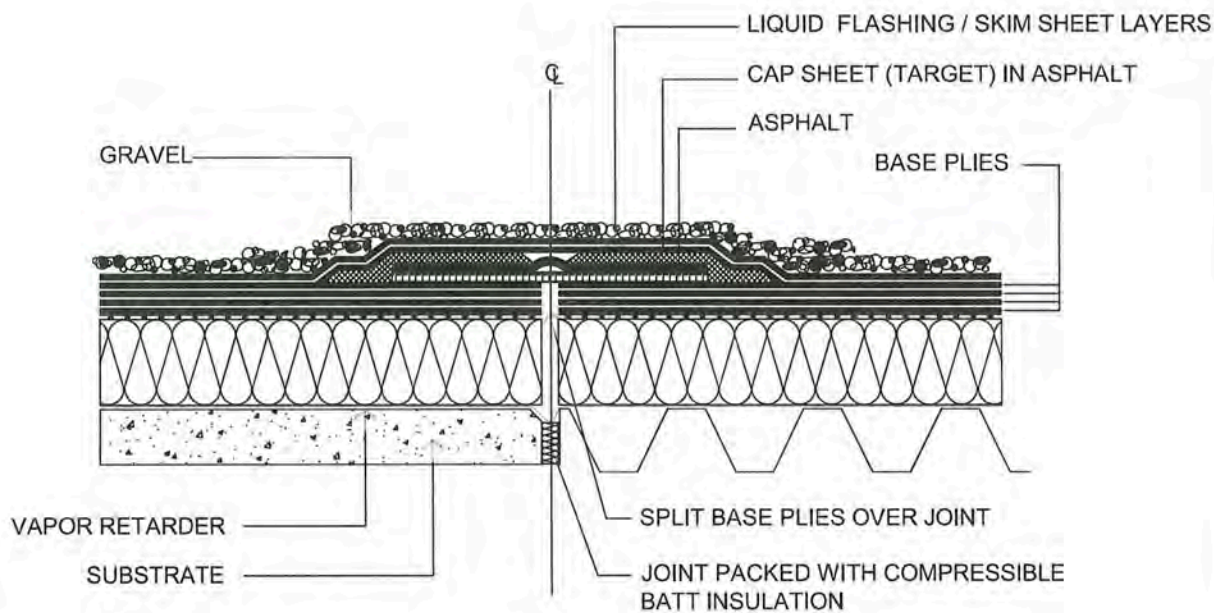
- 7-01 BUILDING EXPANSION JOINT-ROOF TO ROOF
- 7-01A BUILDING EXPANSION JOINT-ROOF TO ROOF (LOW PROFILE)
- 7-02 BUILDING EXPANSION JOINT-ROOF TO WALL
- 7-03 PENETRATION POCKET
- 7-04 RAISED WOODEN BLOCKING EDGE DETAIL
- 7-05 TYPICAL ROOF DRAIN
- 7-06 COPING DETAIL
- 7-07 TYPICAL CRICKET LAYOUT
- 7-08 TYPICAL PITCH POCKET DETAIL
- 7-09 FLASHING AT INSULATED PRE-FABRICATED METAL CURB
- 7-09A FLASHING AT UN-INSULATED PRE-FABRICATED METAL CURB
- 7-09B ROOF CURB CAP DETAIL
- 7-09C OUT OF PHASE CURB AT EXIT ROOF SYSTEM
- 7-10 EQUIPMENT SUPPORT STAND AND TYPICAL RAIN COLLAR PENETRATION
- 7-11 BASE FLASHING WITH SHEET-METAL REGLET AT WALL- SUPPORTED DECK
- 7-12 ROOF HATCH DETAIL
- 7-13 GUTTER DETAIL
- 7-14 SCUPPER DETAIL
- 7-15 DUCT COVER DETAIL
- 7-15A DUCT COVER DETAIL
- 7-16 LADDER DETAILS
- 7-17 EQUIPMENT SUPPORT DETAIL
- 7-18 EXIST. METAL ROOF OPENING INFILL DETAIL
- 7-19 TYPICAL LIQUID PIPE FLASHING
- 7-20 EXIST. GYPSUM ROOF DECK OPENING INFILL DETAIL
- 7-21 THROUGH WALL DETAILS – NEW WALLS
- 7-21A THROUGH WALL DETAILS – EXISTING WALLS
- 7-22 TYPICAL ROOF SYSTEM ASSEMBLY@ COMPLETE TEAR OFF OR NEW CONSTRUCTION
- 7-23 PIPE PENETRATION THRU ROOF DETAIL
- 7-24 COUNTER FLASHING STEP DETAIL
- 7-25 GUARD RAIL DETAIL
- 7-26 TUBULAR SKYLIGHT AT GYMNASIUM



NOTES:

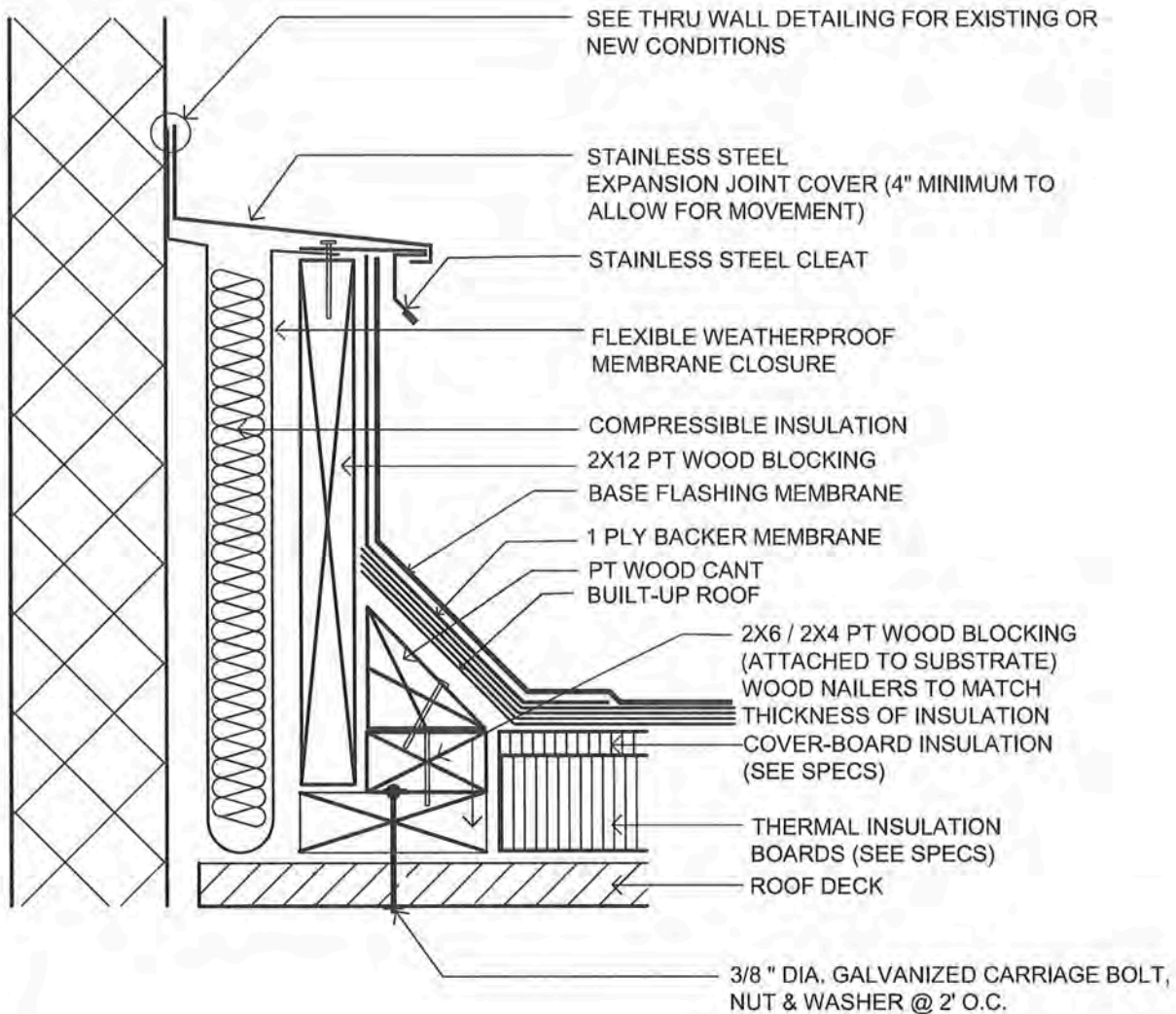
1. THIS DETAIL ALLOWS FOR BUILDING MOVEMENT IN MULTIPLE DIRECTIONS.
2. FLASHING REQUIREMENTS ARE TYPICAL FOR BOTH SIDES OF EXPANSION JOINT.
MOP- OR COLD-APPLIED FLASHING AT EXPANSION JOINT WITH METAL COVER

BUILDING EXPANSION JOINT- ROOF TO ROOF NTS

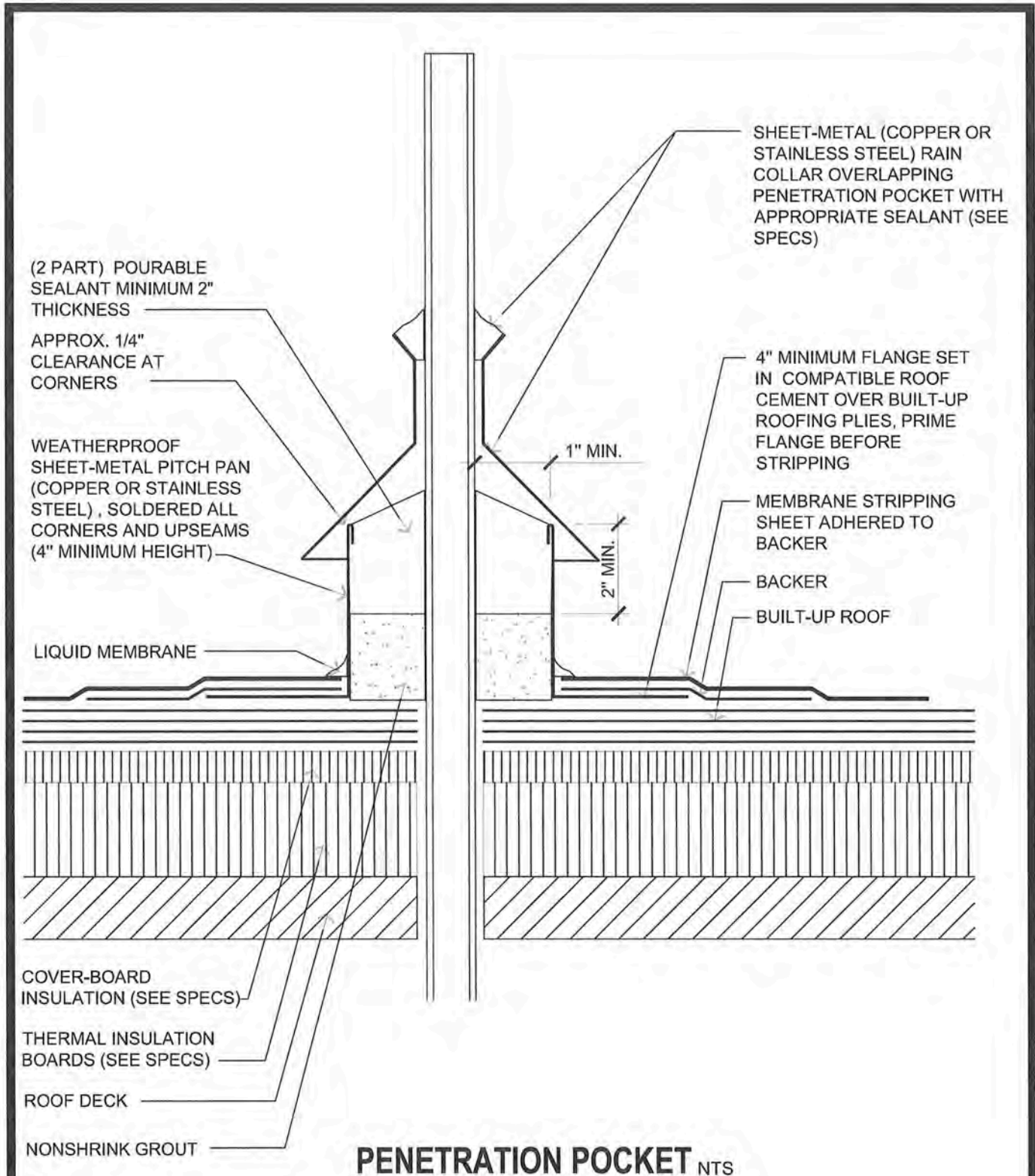


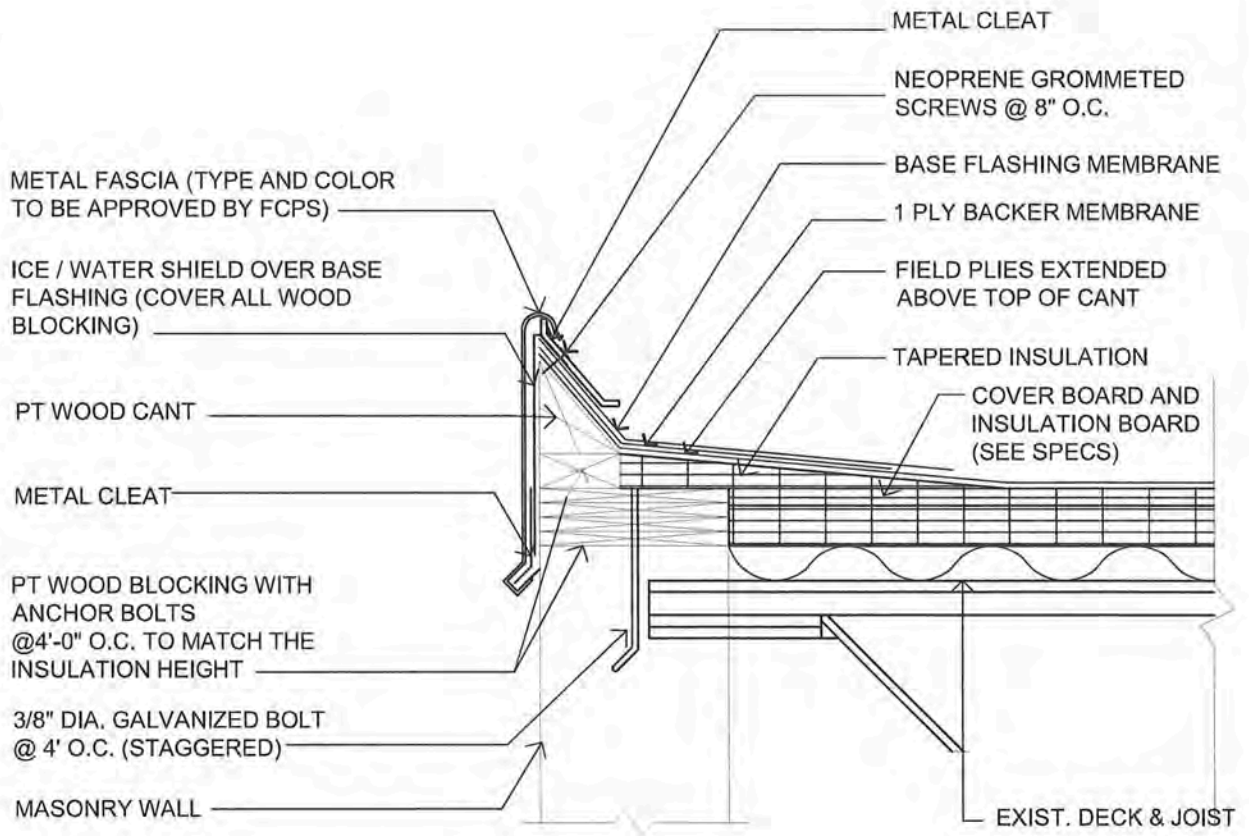
NOTE:
 PROVIDE STRUCTURAL SUPPORT SYSTEM AS INDICATED ON
 DRAWINGS.

BUILDING EXPANSION JOINT- ROOF TO ROOF (LOW PROFILE) NTS



BUILDING EXPANSION JOINT- ROOF TO WALL NTS





RAISED WOOD BLOCKING EDGE DETAIL NTS

12'-0" X 12'-0" SUMP AREA

MANUFACTURERS LIQUID MEMBRANE FLASHING

APPROVED MANUFACTURER COOL ROOF CAP SHEET OVER ENTIRE SUMP AREA TO EXTEND MINIMUM 6" OUTSIDE SUMP

4 MINIMUM LEAD FLASHING SET IN FLASHING CEMENT STRIPPED IN W/ 2 PLYS FELT

AT OVERFLOW PIPE - LIQUID FLASHING MUST BE FULLY REINFORCED WITH MANUFACTURERS FLEECE AS PER MANUFACTURERS SPECIFICATIONS

1/2" MESH STAINLESS STEEL COVER OVER PIPE

3'-0" FROM CENTER DRAIN

6'-0"

STAINLESS STEEL BAND CLAMP

BASE PLYS

CLAMP RING

STRAINER

3" ABOVE FINISHED SUMP

TAPERED INSULATION (NO TAPERED ISO)

1/2" PRIME COATED DENS DECK

STEEL ANGLE TYP. DECK CLAMP

RISER CLAMP

OVERFLOW AS INDICATED ON ROOF PLAN

TYP. ROOF DRAIN WITH OVER FLOW PIPE NTS

CONTINUOUS METAL CLEAT

1" EPS (FOAM) TAPERED INSULATION BY ROOFER

ICE/WATER SHIELD OVER ALL BLOCKING

METAL STANDING SEAM COPING

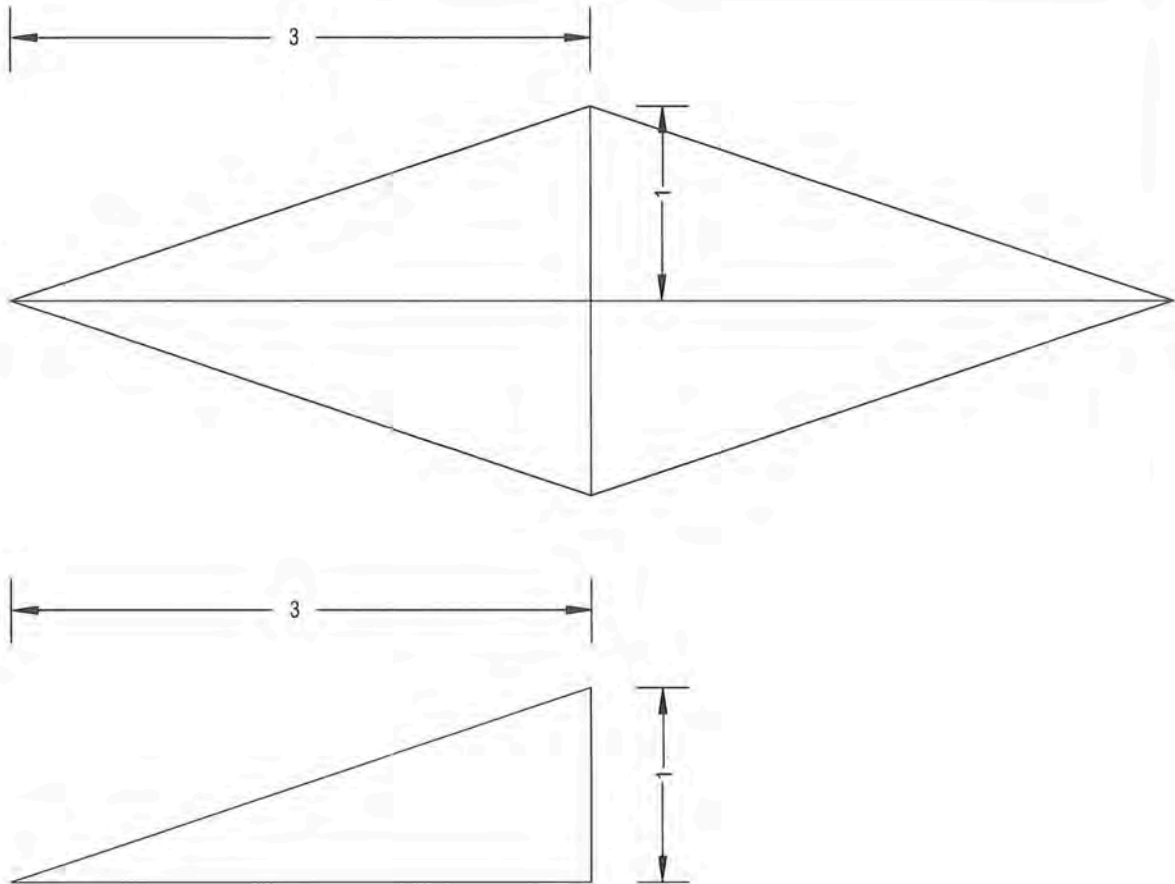
CONTINUOUS METAL CLEAT

EXIST. MASONRY OR NEW WALL

4" MIN.

2" NOMINAL SIZE THICK PT WOOD
BLOCKING (TYP.) WITH 3/8" DIA. 8" LONG
ANCHOR BOLT @ 32" O.C. (STAGGERED)

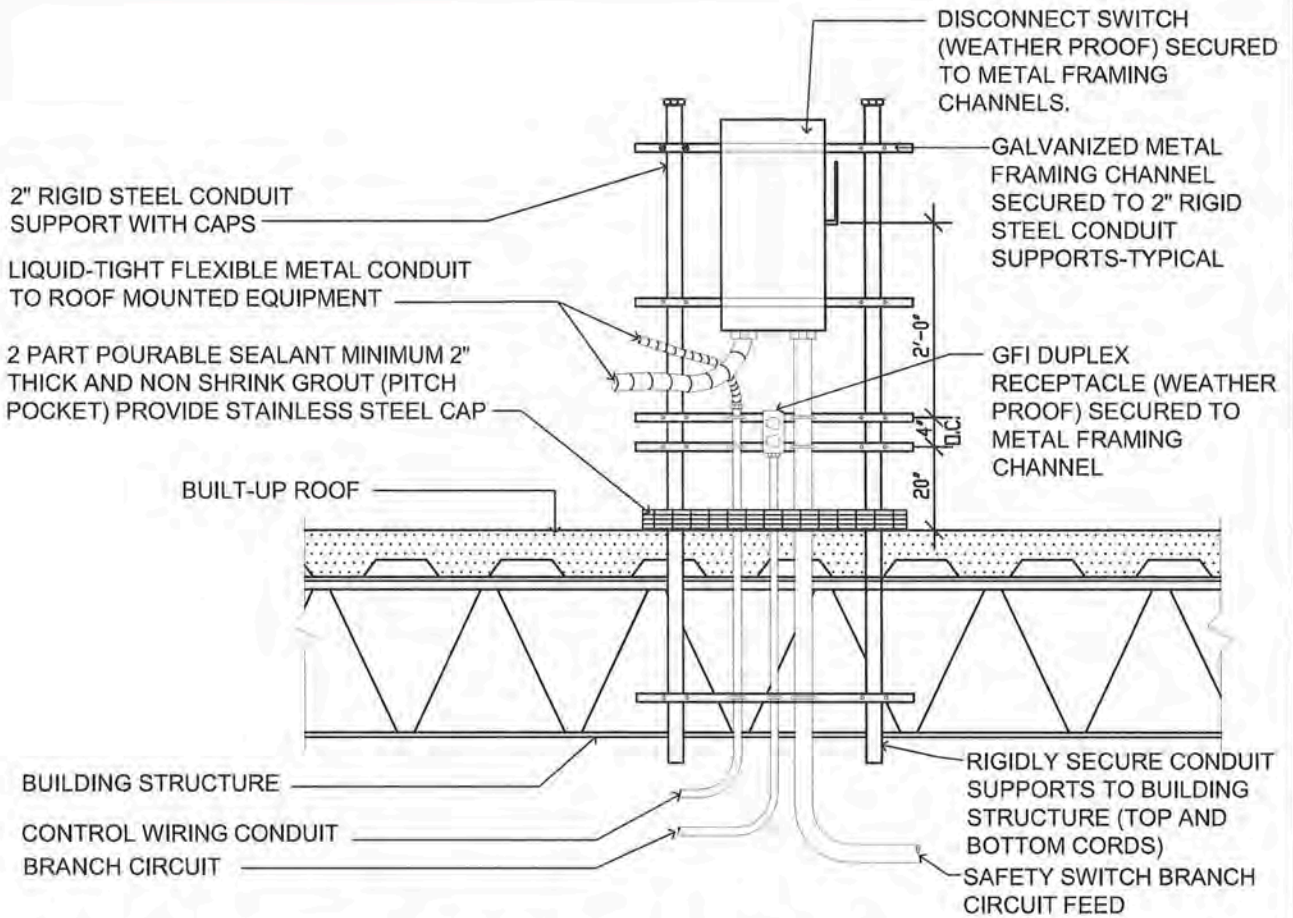
COPING DETAIL NTS



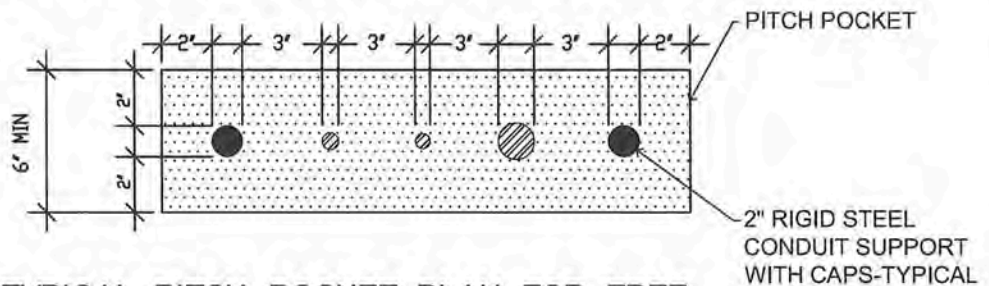
RATIO = 3 TO 1

PROVIDE CRICKETS BETWEEN ROOF DRAINS AND ON THE HIGH SIDE OF ALL CURBS.
SEE CONTRACT DRAWINGS OR AS DIRECTED BY FCPS REPRESENTATIVE

TYP. CRICKET LAYOUT NTS



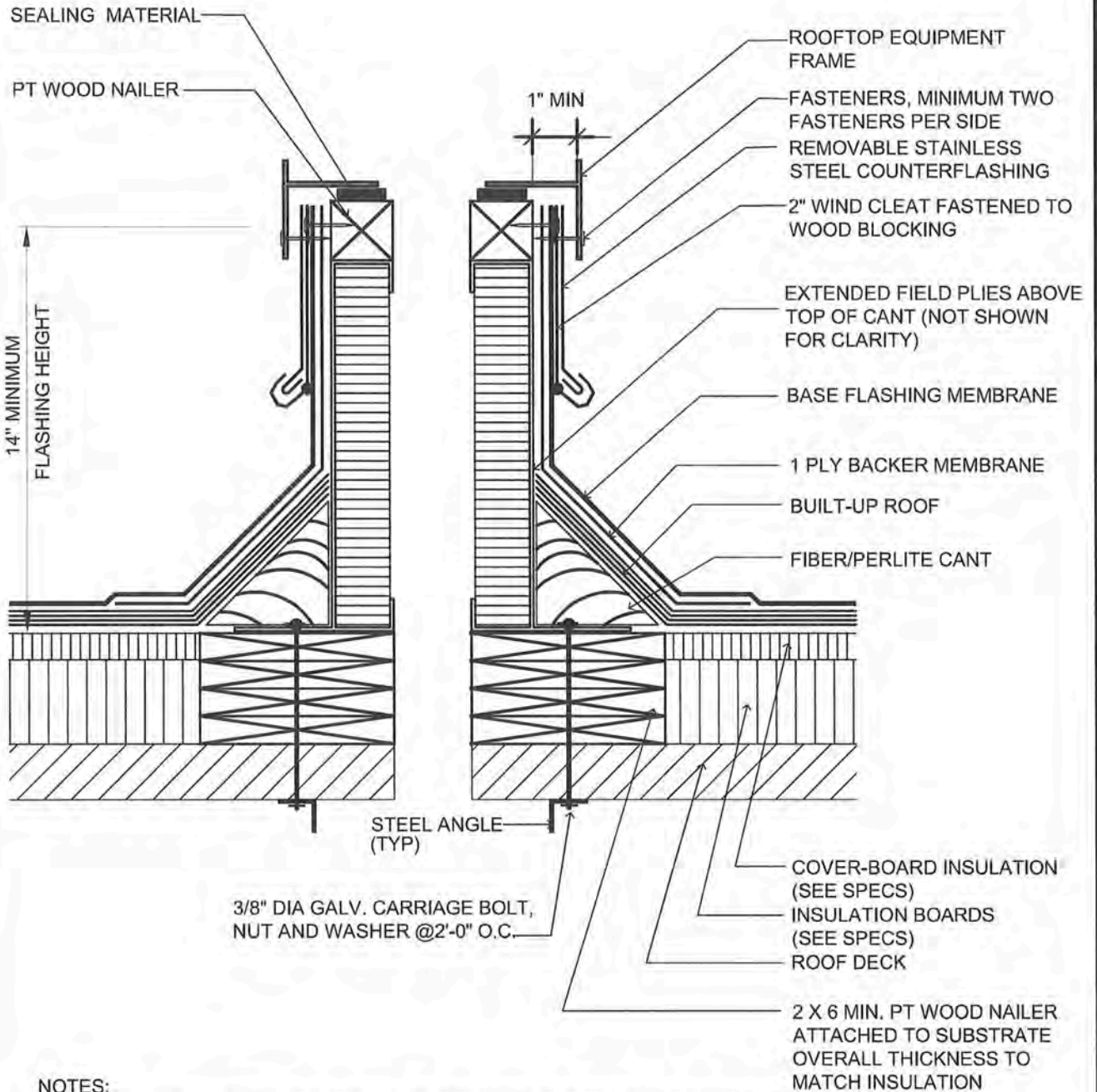
FREE STANDING SAFETY SWITCH ROOF MOUNTING DETAIL



TYPICAL PITCH POCKET PLAN FOR FREE STANDING ROOF MOUNTED SAFETY SWITCHES

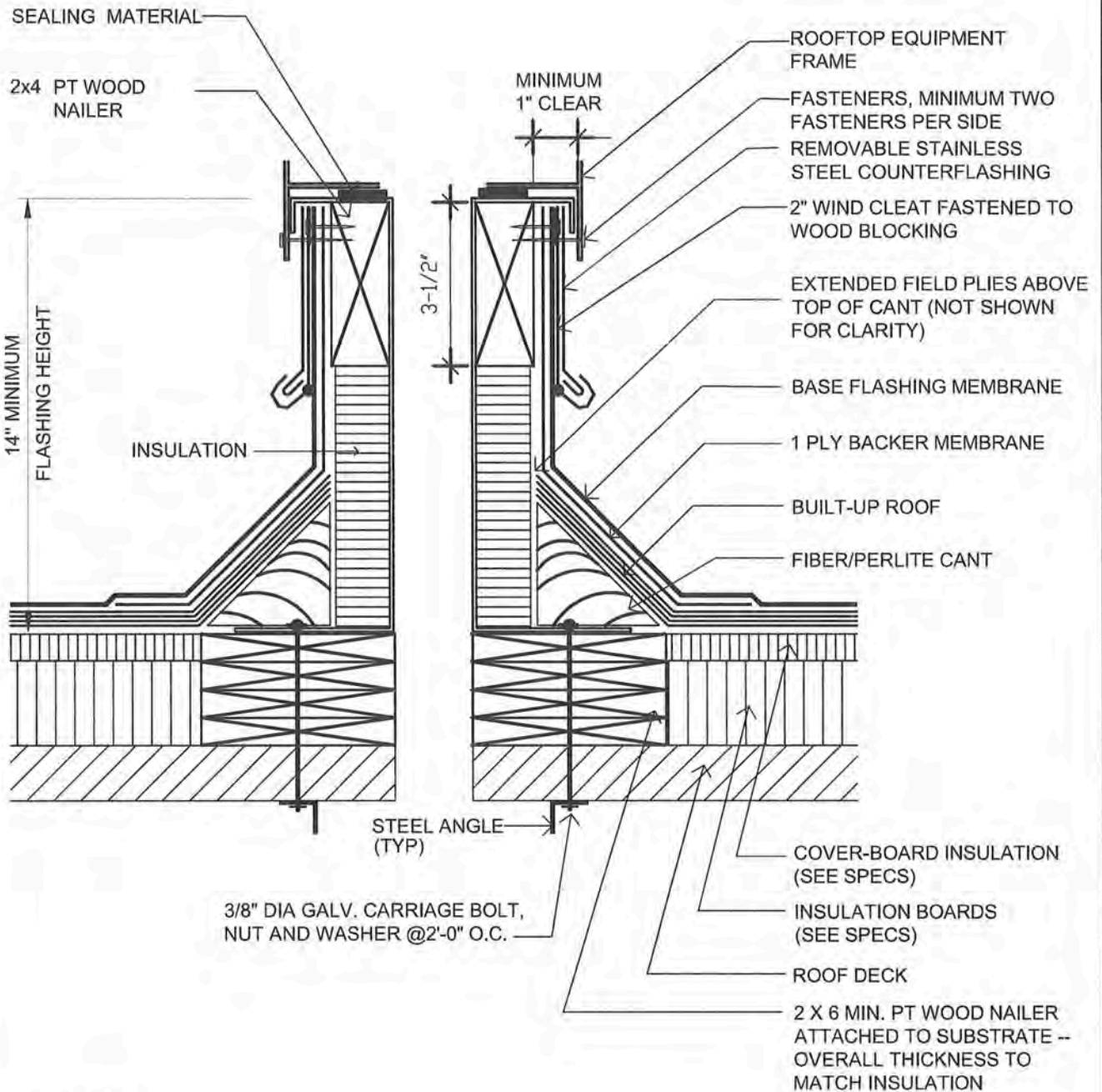
NOTE: FABRICATE AND INSTALL A STAINLESS STEEL TOP FOR ALL PITCH POCKET INSTALLATIONS.

TYPICAL PITCH POCKET DETAIL NTS



NOTES:
 THE MECHANICAL UNITS ARE NOT TO BE SET UNTIL THE ROOF MEMBRANE AND FLASHING HAVE BEEN INSTALLED. WHERE THE SKYLIGHT, SCUTTLE OR SMOKE VENT FRAME OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.

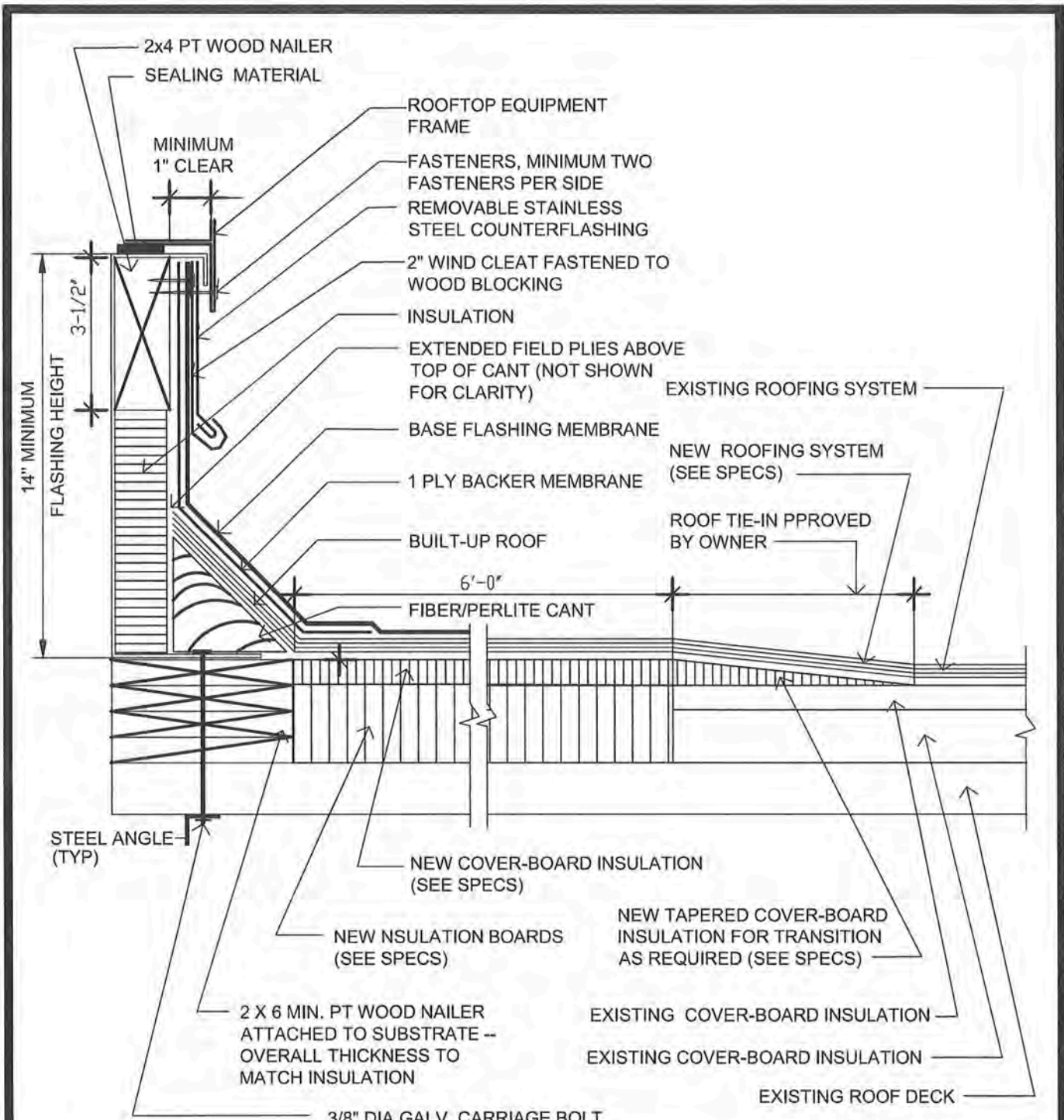
FLASHING AT INSULATED PREFABRICATED METAL CURB NTS



NOTES:

THE MECHANICAL UNITS ARE NOT TO BE SET UNTIL THE ROOF MEMBRANE AND FLASHING HAVE BEEN INSTALLED. WHERE THE SKYLIGHT, SCUTTLE OR SMOKE VENT FRAME OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.

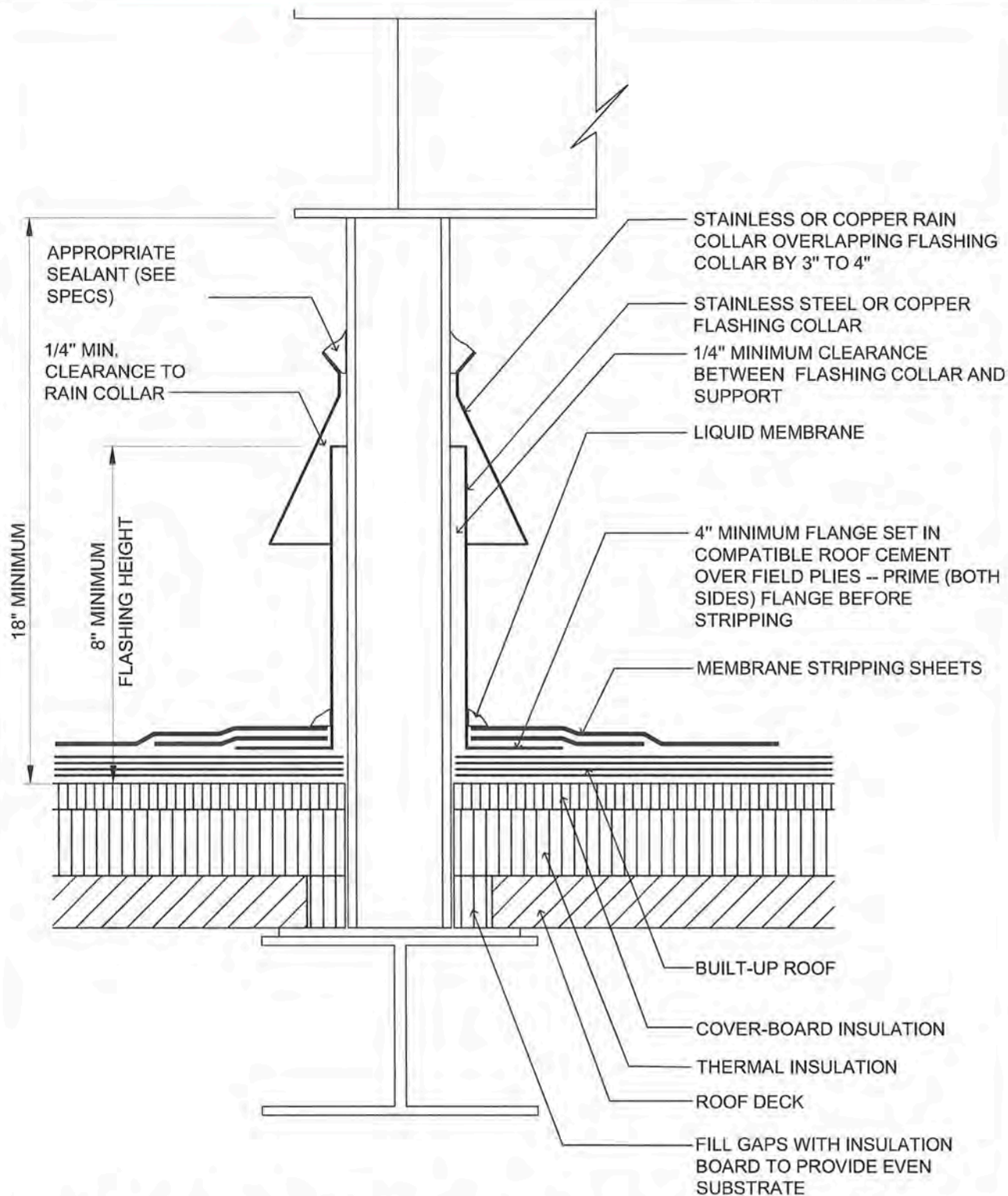
FLASHING AT UN-INSULATED PREFABRICATED METAL CURB NTS



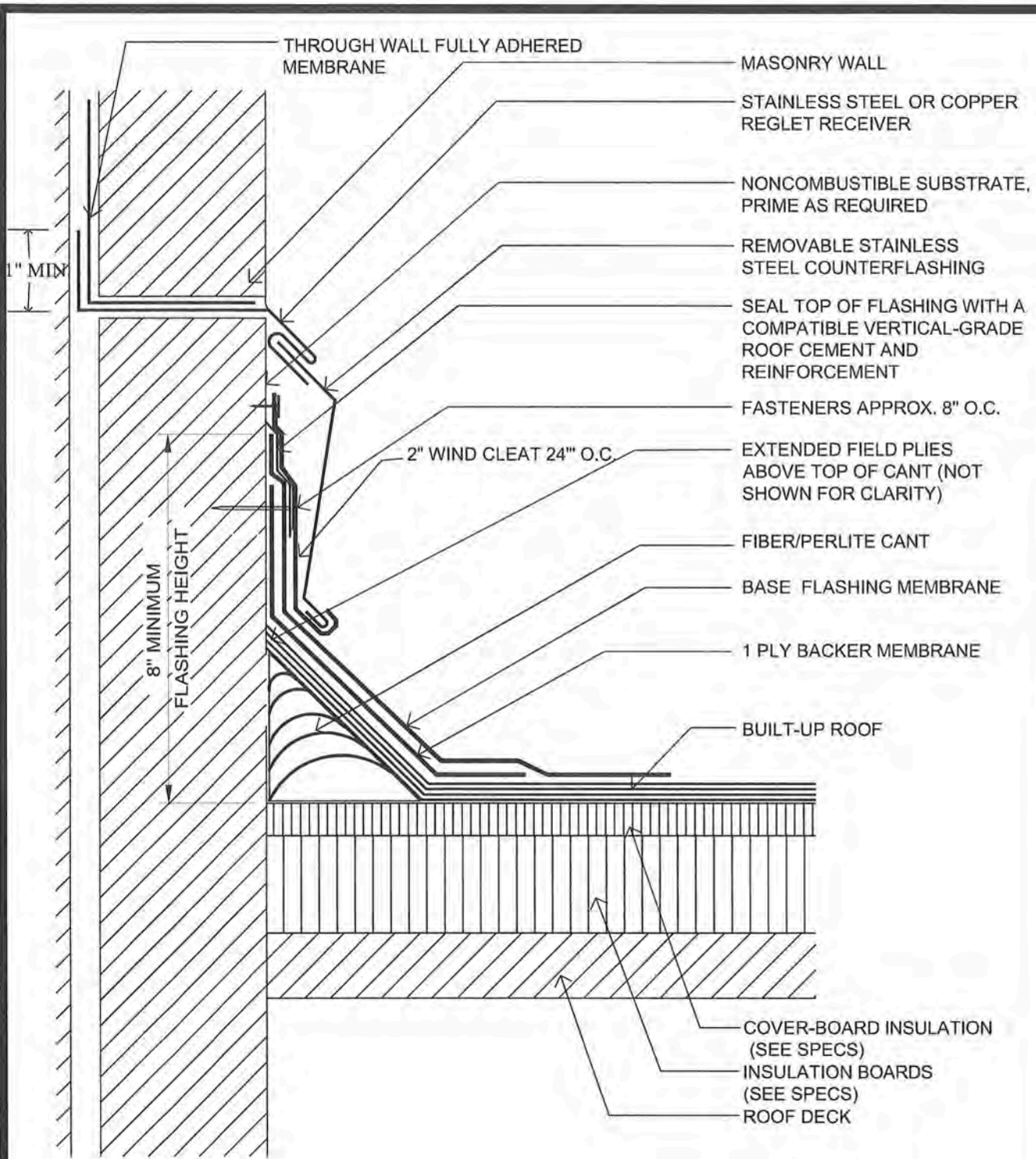
NOTES:
 THE MECHANICAL UNITS ARE NOT TO BE SET UNTIL THE ROOF MEMBRANE AND FLASHING HAVE BEEN INSTALLED. WHERE THE SKYLIGHT, SCUTTLE OR SMOKE VENT FRAME OVERLAPS THE BASE FLASHING AT LEAST 3 INCHES, THE REMOVABLE SHEET-METAL COUNTERFLASHING IS NOT REQUIRED.

OUT OF PHASE ROOF CURB AT EXISTING ROOF SYSTEM

NTS



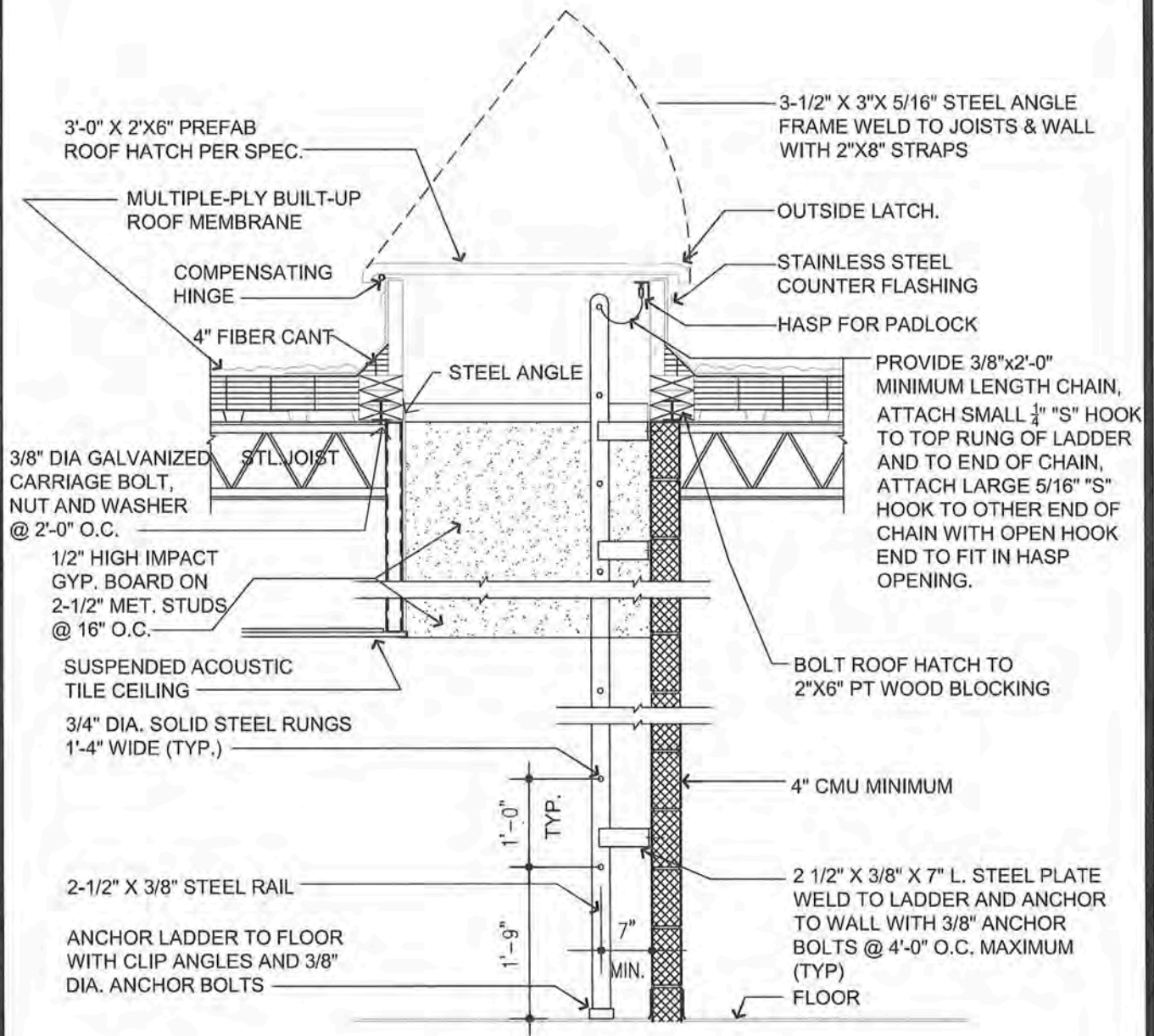
EQUIPMENT SUPPORT STAND AND TYPICAL RAIN COLLAR PENETRATION NTS



NOTES:

- 1. THIS DETAIL SHOULD BE USED ONLY WHERE THE DECK IS SUPPORTED BY THE WALL.

**BASE FLASHING WITH SHEET-METAL REGLET AT
WALL-SUPPORTED DECK NTS**



ROOF HATCH DETAIL NTS

EDGE FLASHING TO BE STAINLESS STEEL. METAL TO BE SET IN COMPATIBLE ROOF CEMENT. METAL TO BE FULLY PRIMED PRIOR TO STRIP IN PLYS

GUTTER HANGERS TO BE 1/8" X 1" ALUMINUM EVERY 16" O.C.

GALVANIZED STEEL FASTENER

(SHEET METAL GUTTER) THE FRONT OF THE FABRICATED GUTTER SHOULD BE A MINIMUM OF 1" LOWER THAN THE BACK TO ALLOW FOR OVERFLOW. REFER TO THE ARCHITECTURAL SHEET METAL SECTION OF THE NRCA ROOFING AND WATERPROOFING MANUAL FOR OTHER SHAPES

LIQUID MEMBRANE (TO BE PAINTED W/ COOL ROOF REFLECTIVE COATING)

STAINLESS STEEL FASTENER

WHITE MODIFIED MEMBRANE (SEE SPECS)

2 PLYS TYPE 4 FELT

BUILT UP ROOF

COVER BOARD & INSULATION BOARDS (SEE SPECS)

ROOF DECK

2X6 MINIMUM PT WOOD NAILER ATTACHED TO SUBSTRATE OVERALL THICKNESS TO MATCH INSULATION

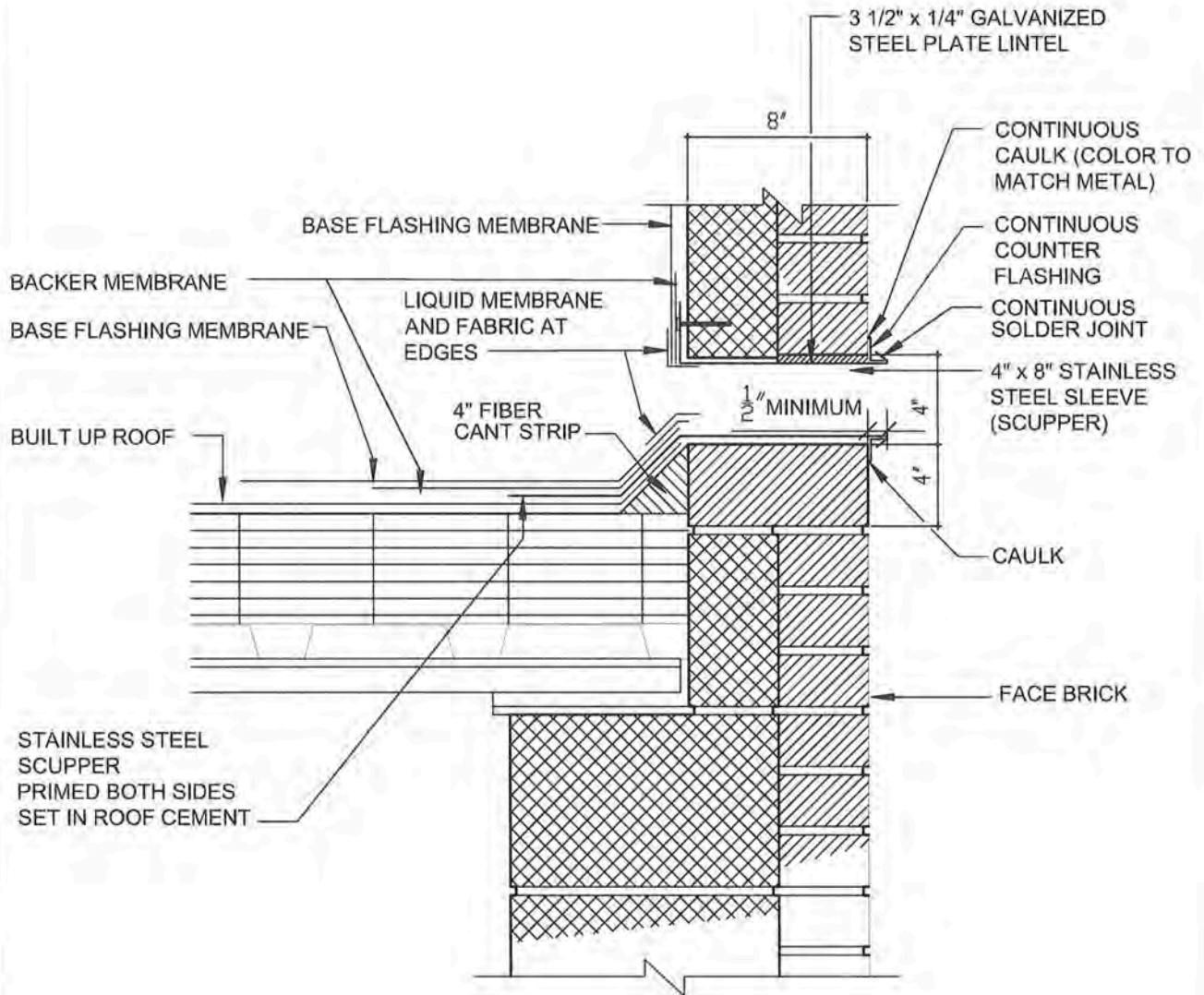
2X10 MINIMUM PT WOOD BLOCKING

EXTERIOR WALL SYSTEM

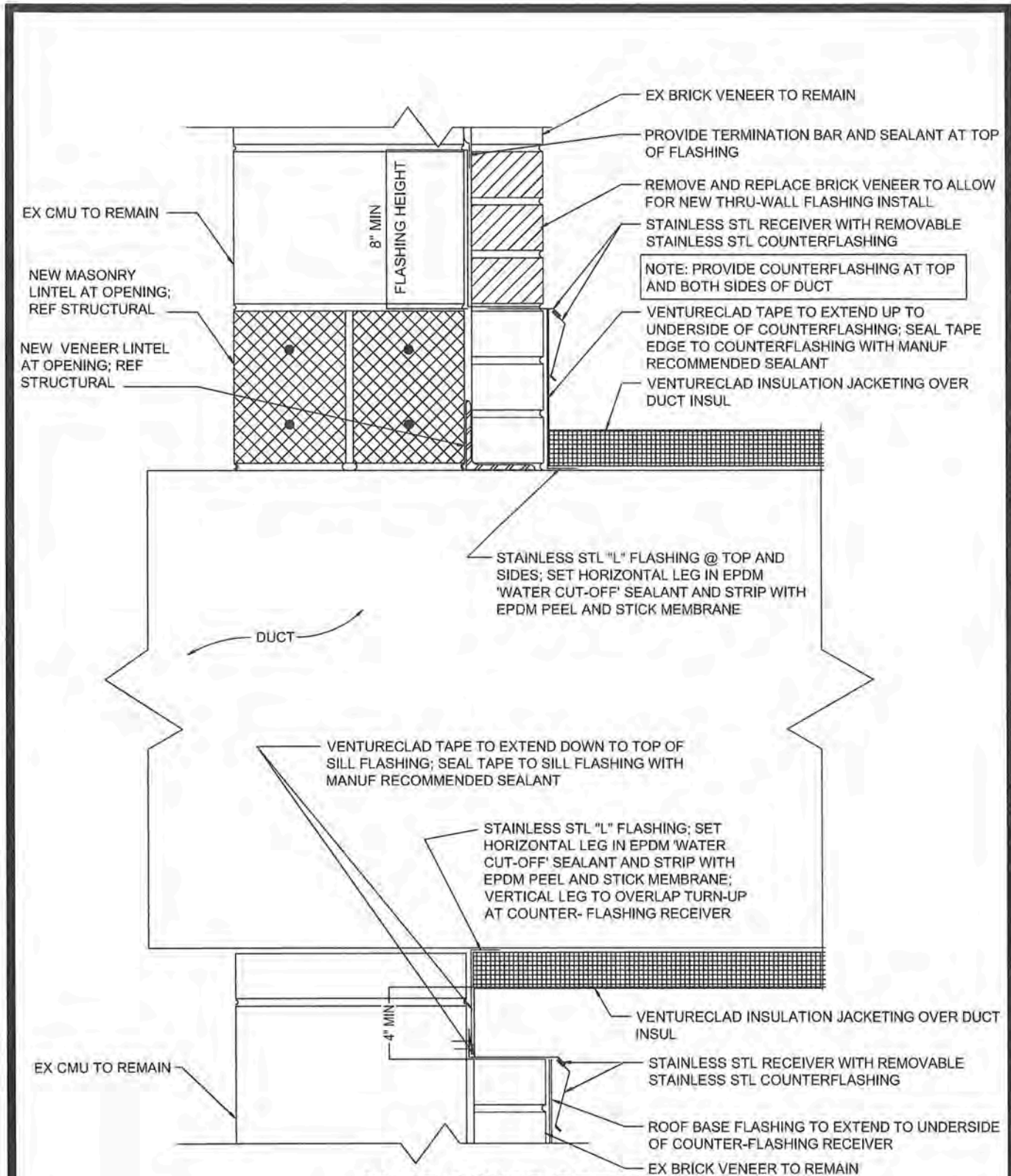
MINIMUM .032 ALUMINUM METAL FOR FASCIA CLADDING

ICE AND WATER SHIELD SELF ADHERED MEMBRANE EXTENDED TO COVER ALL EXPOSED WOOD BLOCKING/ FASCIA

GUTTER DETAIL NTS

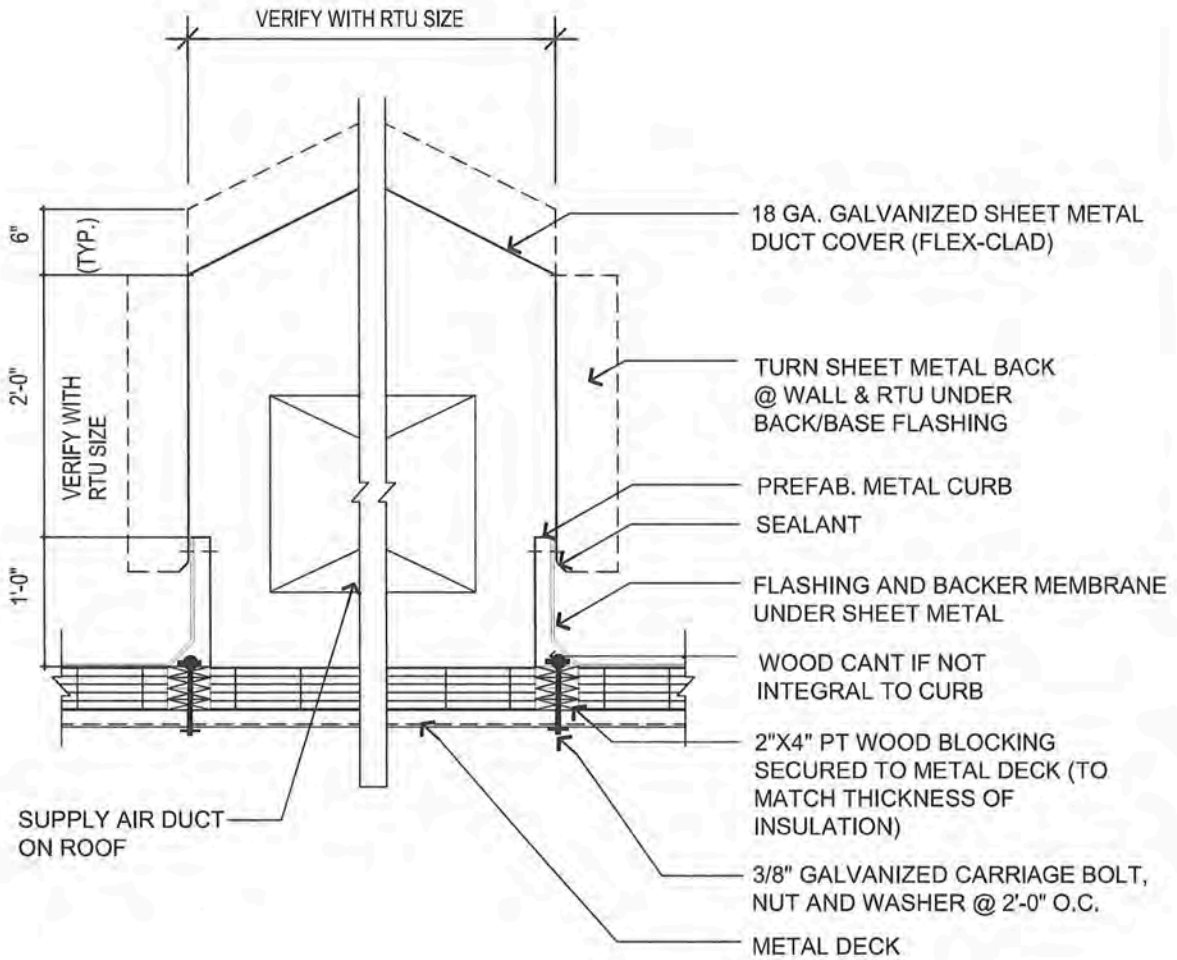


SCUPPER DETAIL NTS

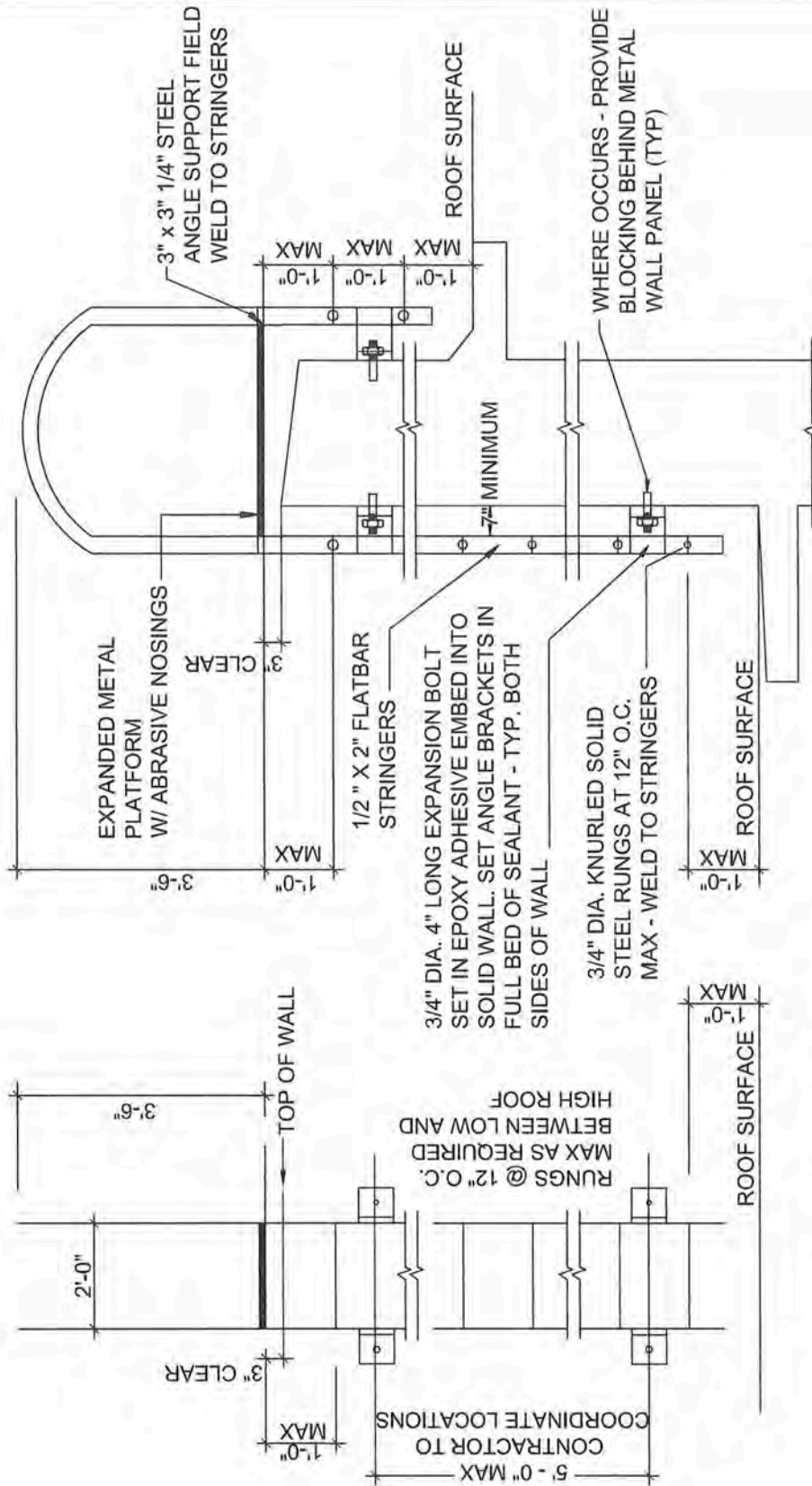


DUCT COVER DETAIL

NTS



DUCT COVER DETAIL NTS



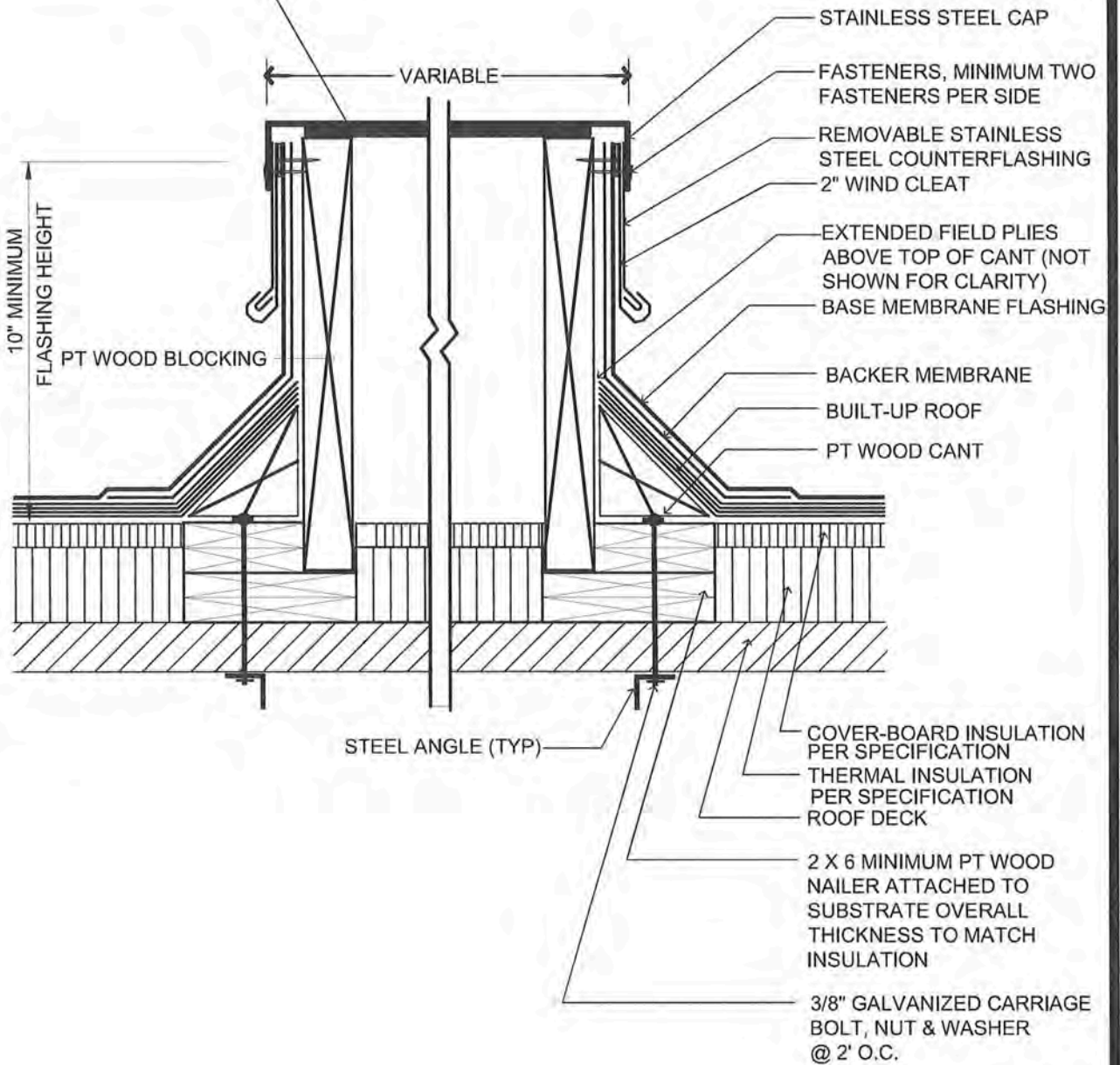
LADDER ELEVATION

LADDER SECTION

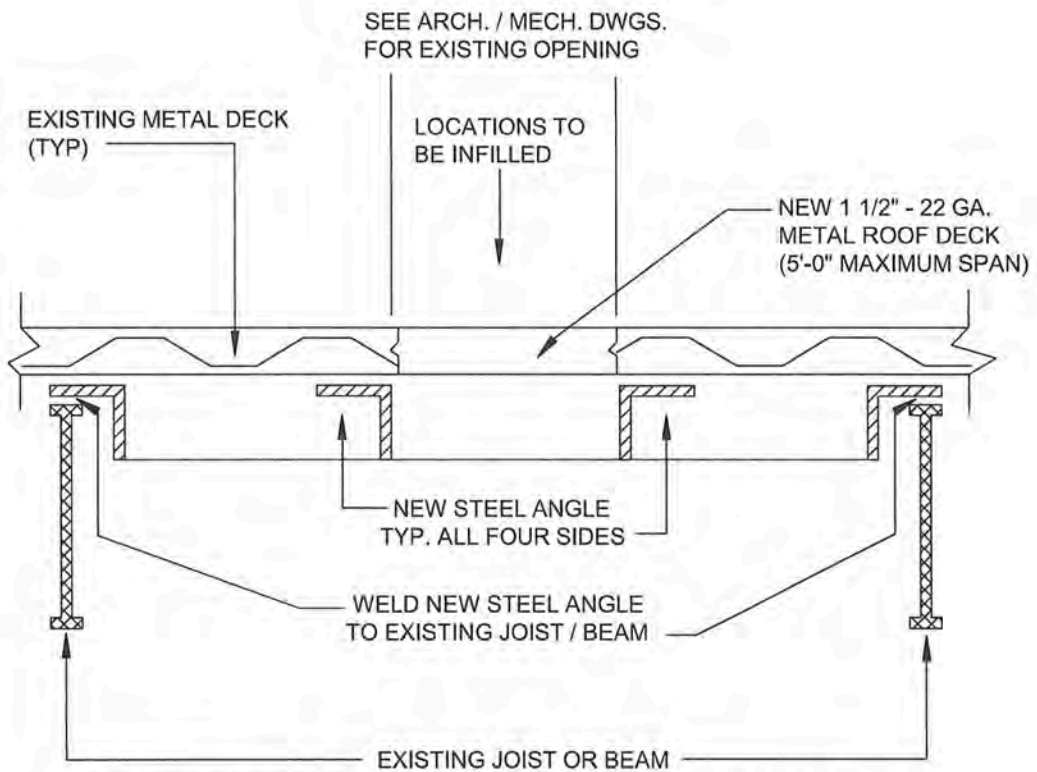
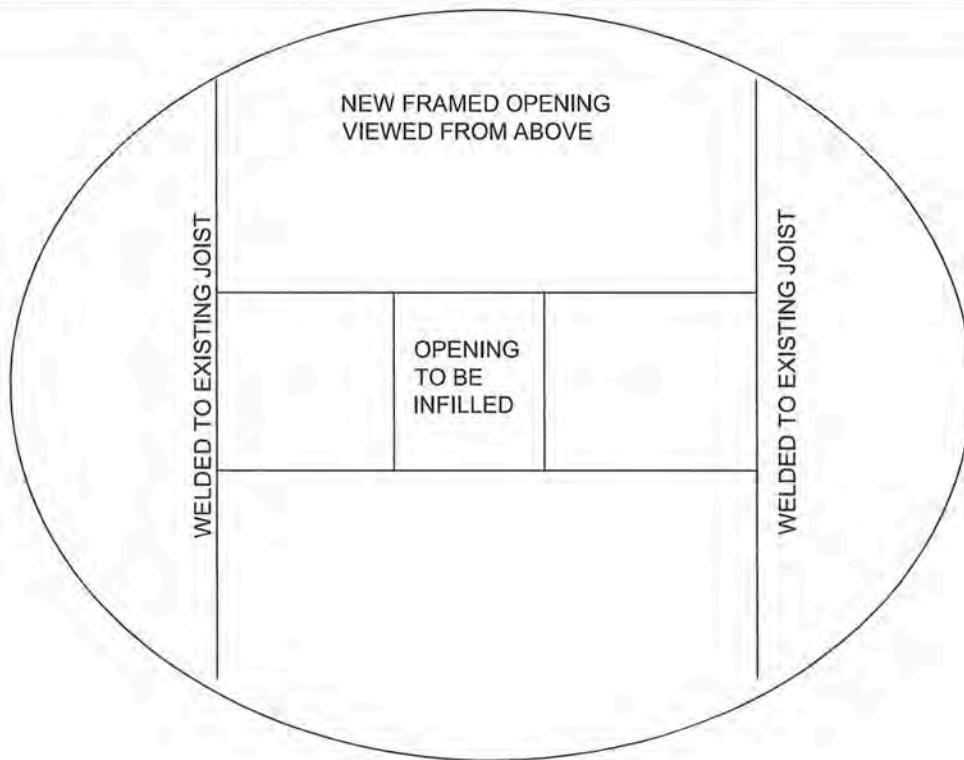
NOTE:
ALL LADDER COMPONENTS SHALL BE GALVANIZED.

LADDER DETAIL NTS

3/4" EXTERIOR PLYWOOD

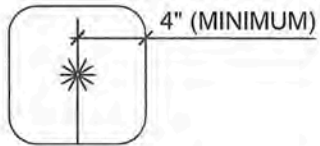


EQUIPMENT SUPPORT DETAIL NTS

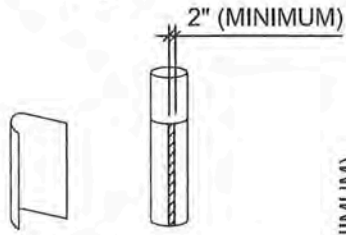


EXISTING METAL ROOF DECK OPENING INFILL DETAIL NTS

POLYESTER FABRIC

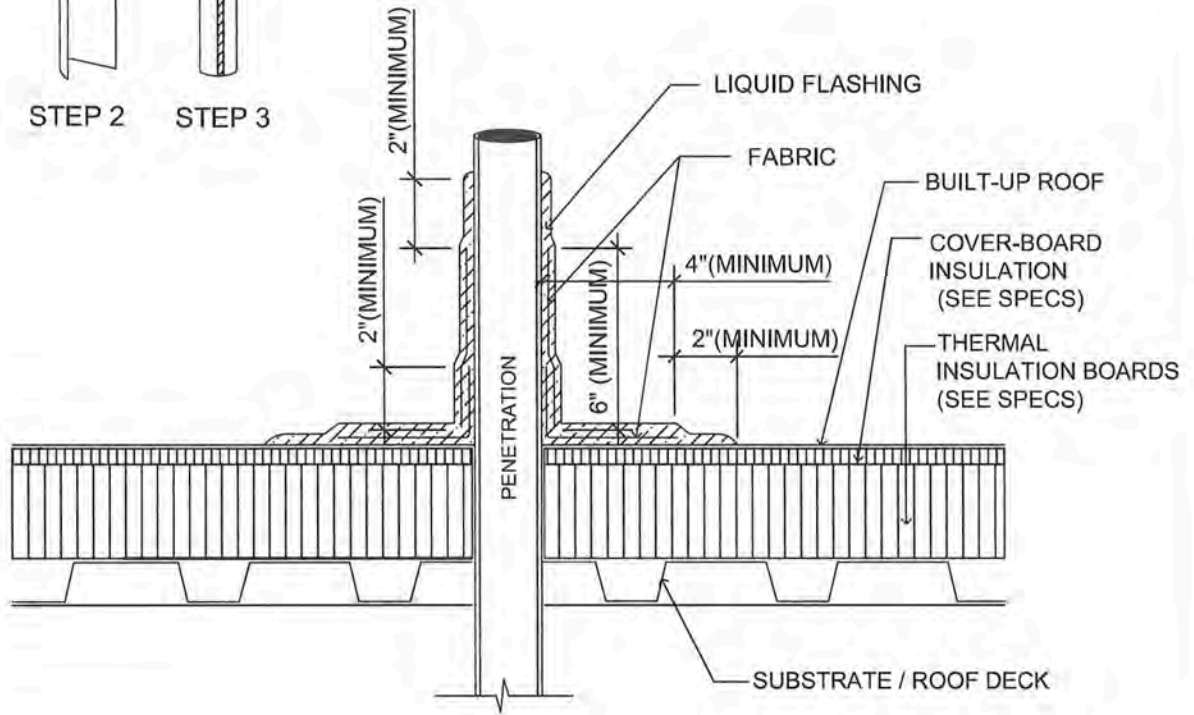


STEP 1

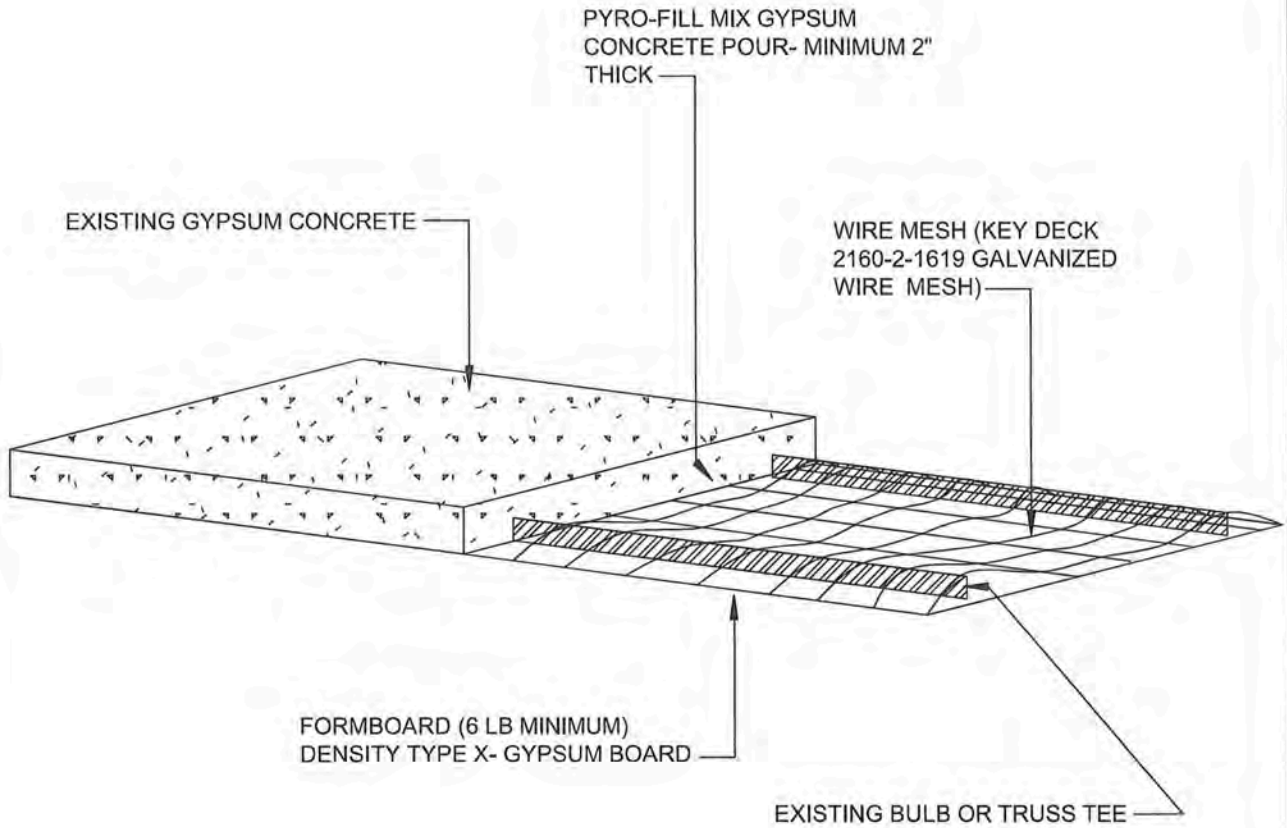


STEP 2

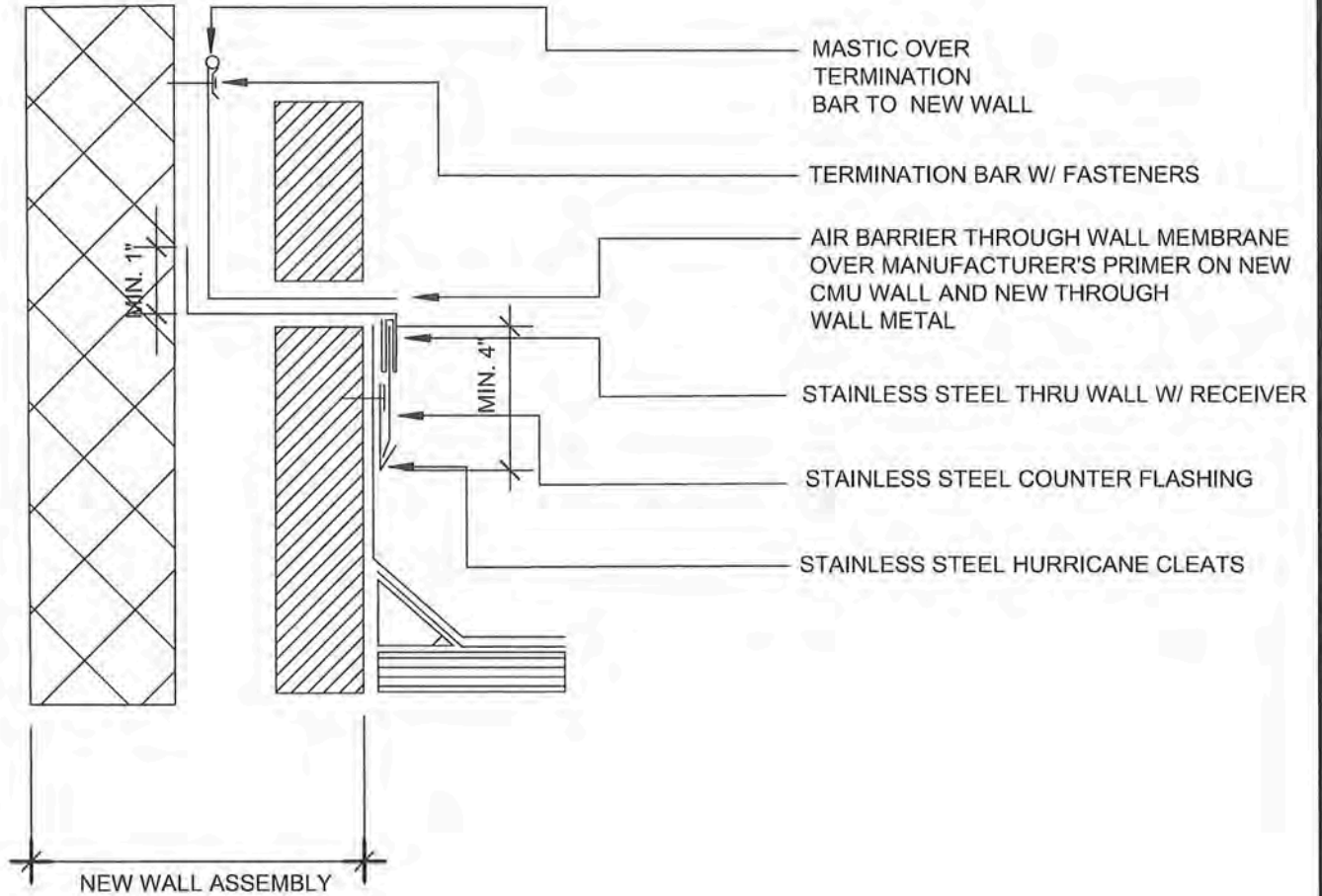
STEP 3



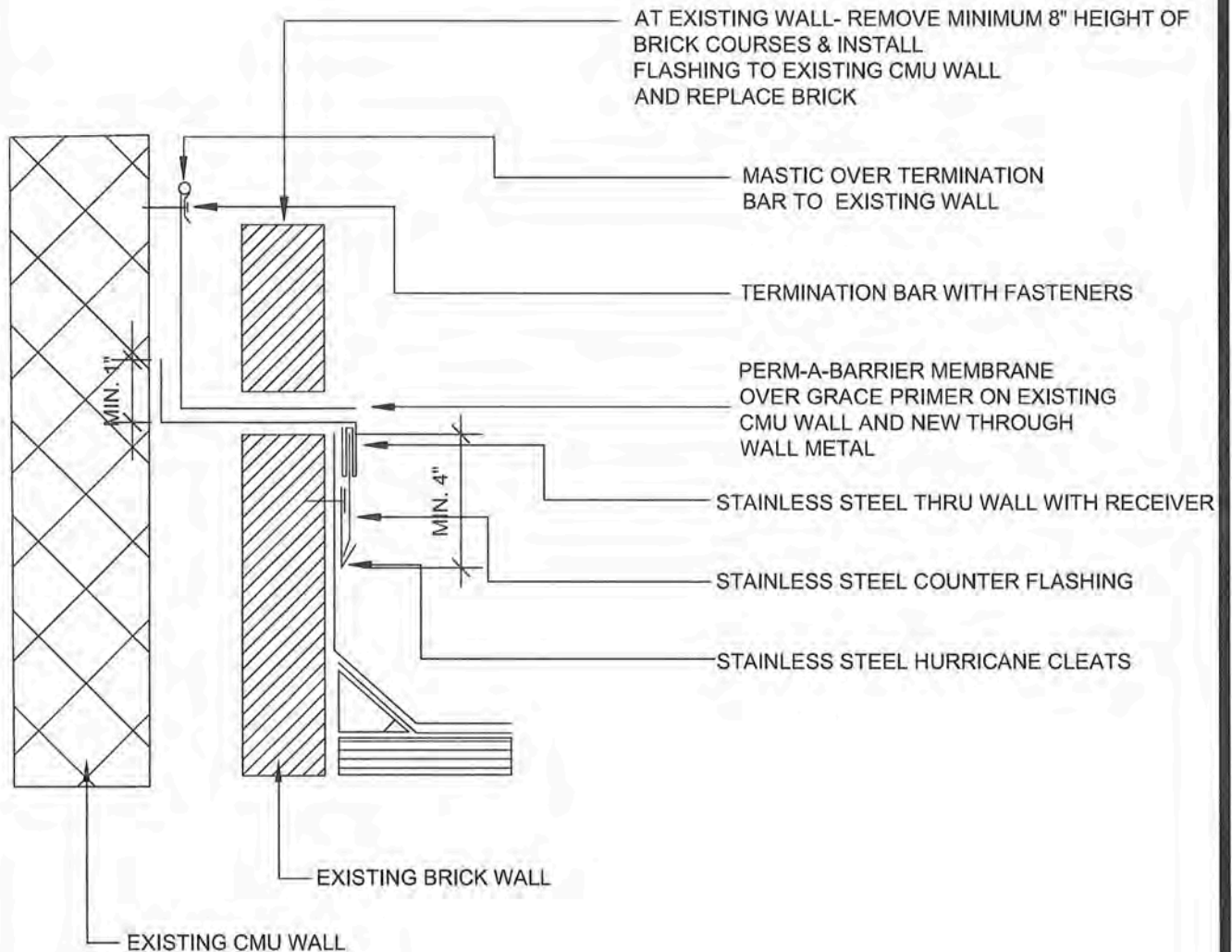
TYPICAL LIQUID PIPE FLASHING NTS



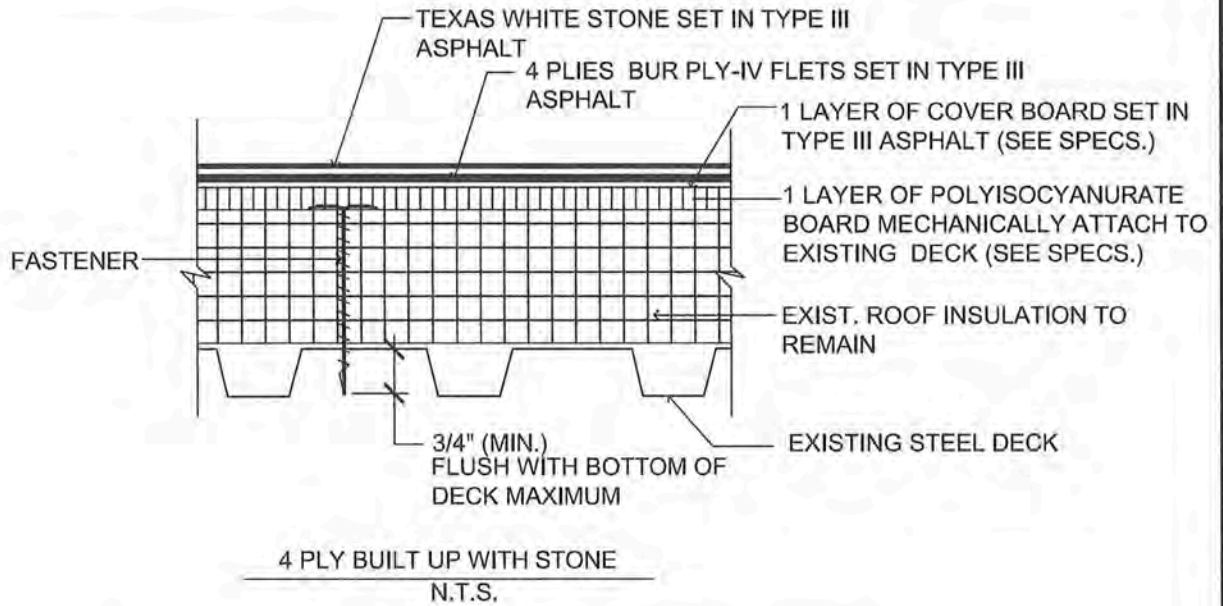
EXIST. GYPSUM ROOF DECK OPENING INFILL DETAIL NTS



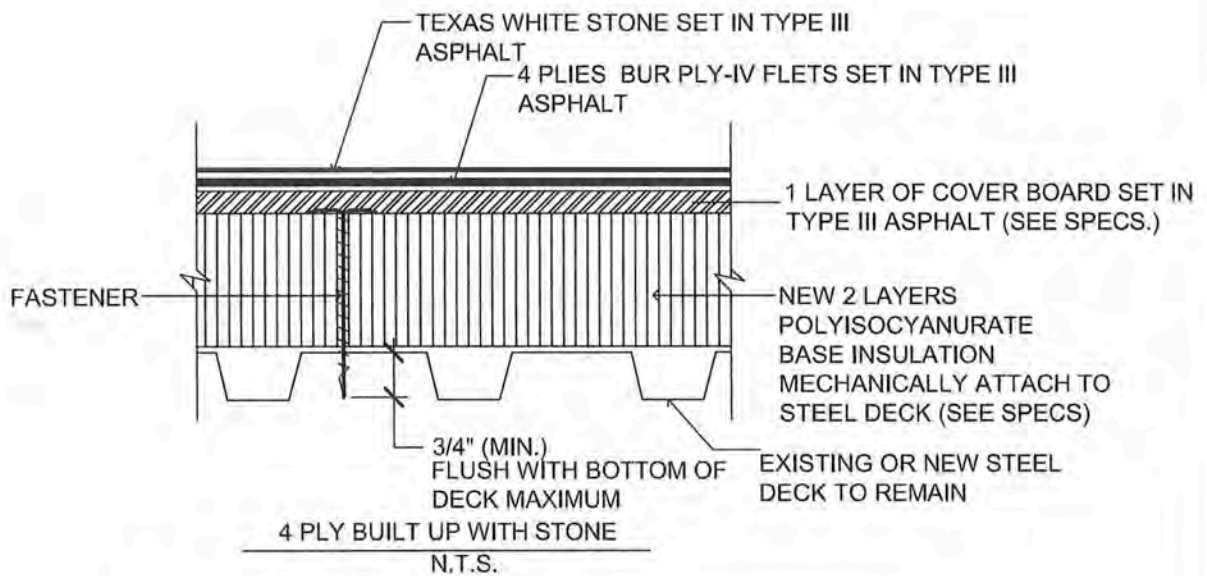
THRU WALL DETAILS - NEW WALL NTS



THRU WALL DETAILS - EXISTING WALL NTS

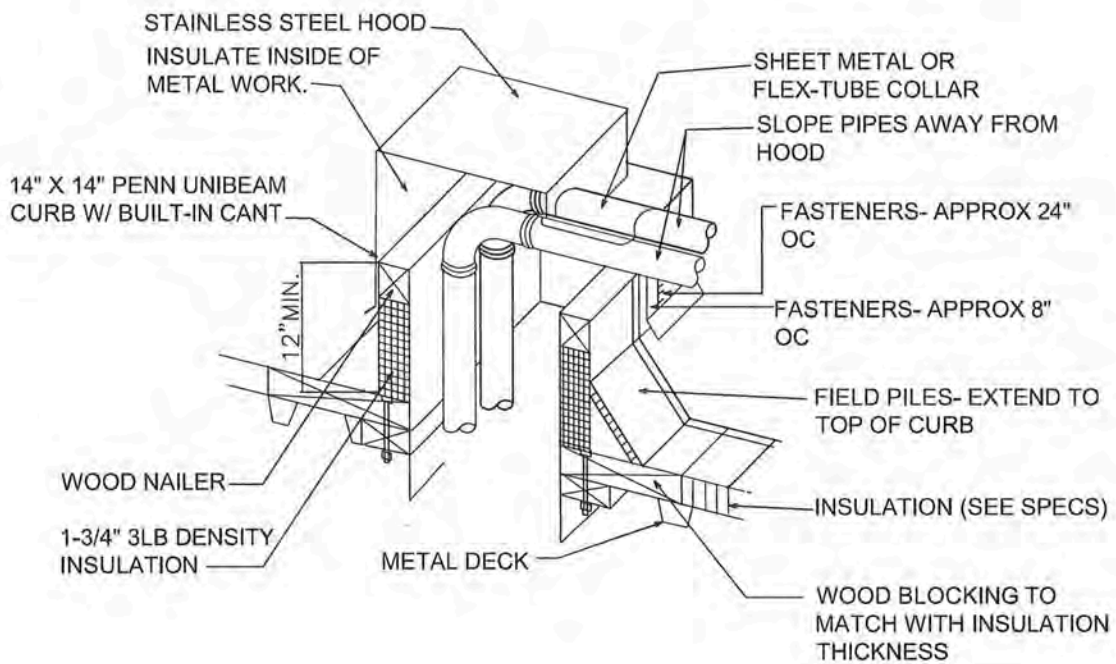


TYPICAL ROOF SYSTEM ASSEMBLY @ PARTIAL TEAR OFF (TYPE II)

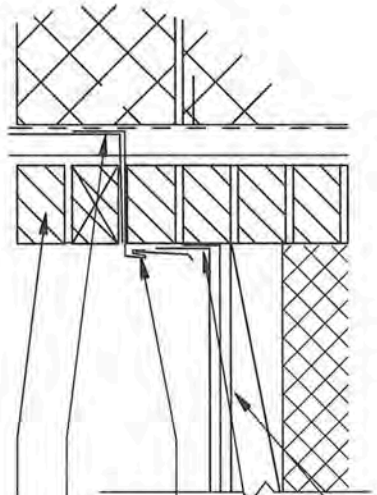


TYPICAL ROOF SYSTEM ASSEMBLY @ COMPLETE TEAR OFF OR NEW CONSTRUCTION (TYPE I)

TYPICAL ROOF SYSTEM ASSEMBLY NTS



PIPE PENETRATION THRU ROOF DETAIL NTS



VENEER BRICK WITH WEEPS

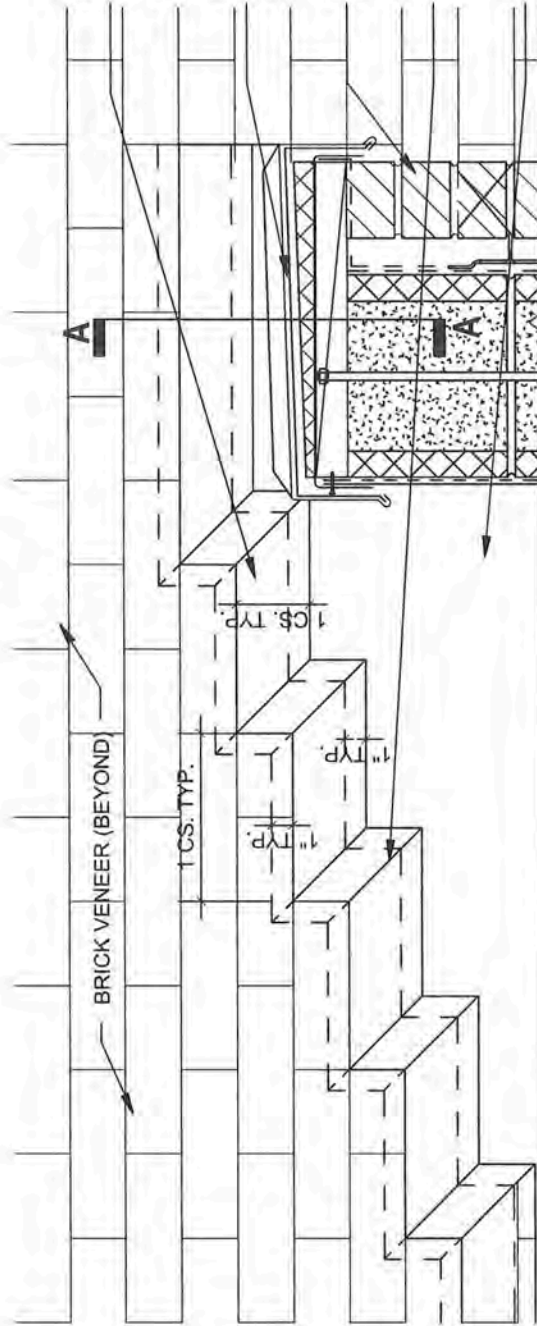
THRU-WALL FLASHING MEMBRANE FULLY ADHERED TO AIR BARRIER & METAL THRU-WALL RECEIVER

S. STL. THRU-WALL COUNTER FLASHING RECEIVER

S. STL. COUNTER FLASHING

PREFINISHED STANDING SEAM METAL COPING. TURN UP AT END MIN. 1" AND COVER WITH COUNTER FLASHING

SECTION AA



S. STL. THRU-WALL COUNTER FLASHING RECEIVER BEYOND. STEP UP WITH BRICK COURSE TO ABOVE COPING LEVEL.

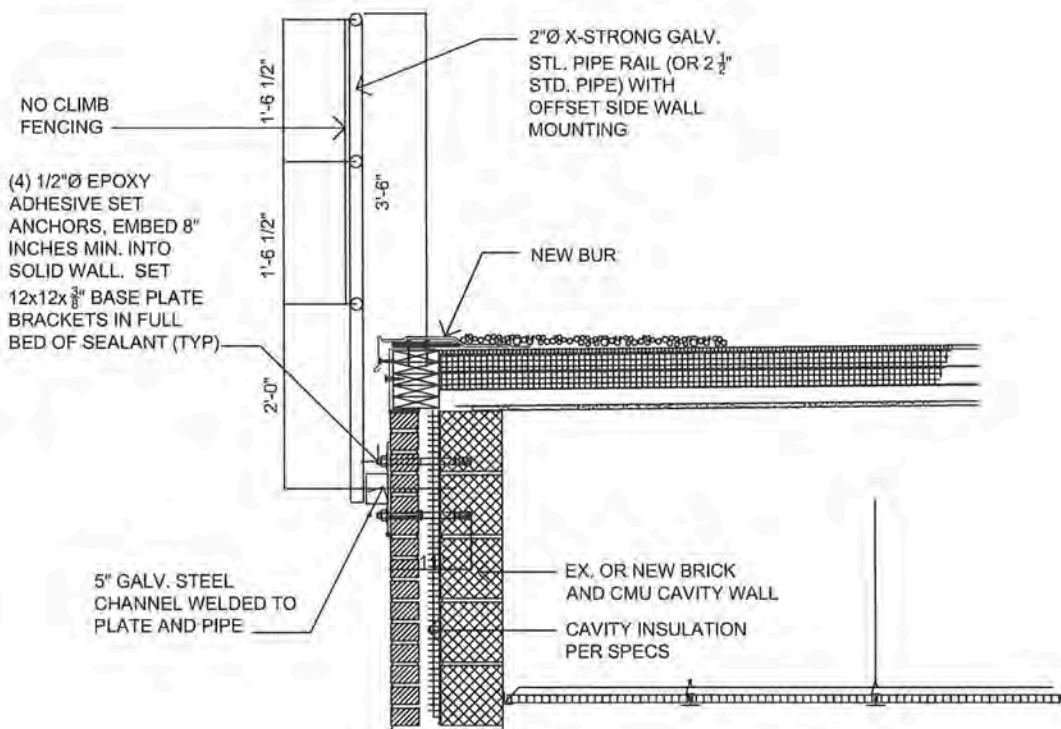
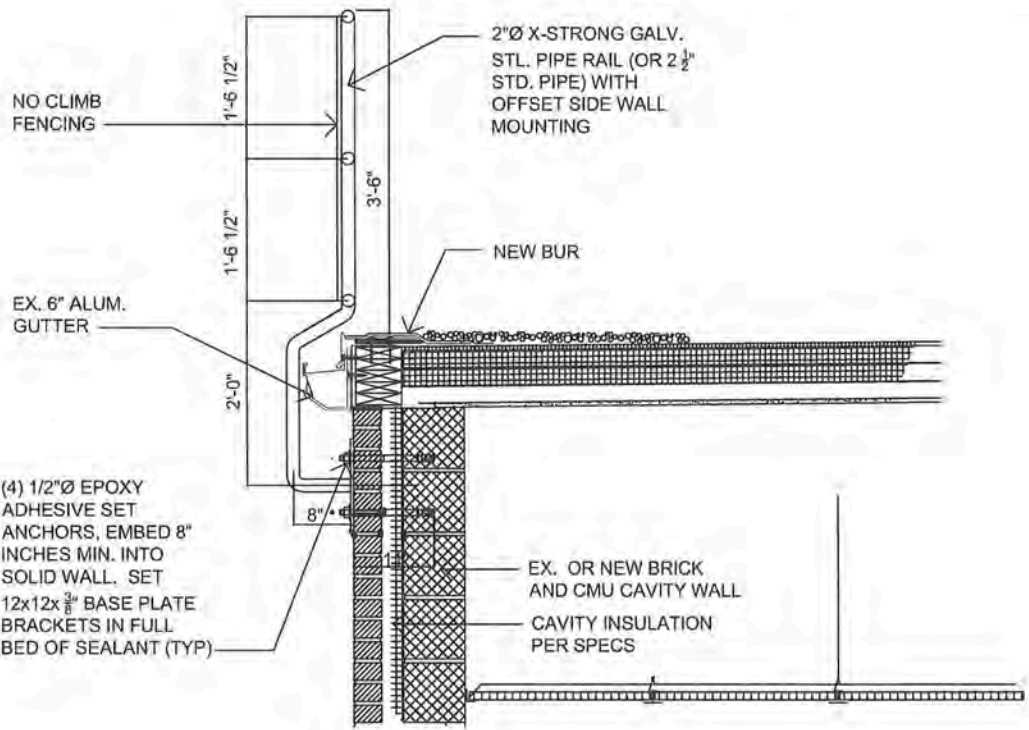
PREFINISHED STANDING SEAM METAL COPING (SEE 7/A216, TYP.)

MASONRY PARAPET PER DETAIL 7/A216

ALL MITER CUTS @ 45°, FULLY SOLDERED

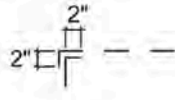
BIU/R BASE FLASHING SYSTEM BEYOND

COUNTER FLASHING STEP DETAIL
NTS



GUARD RAIL DETAIL NTS

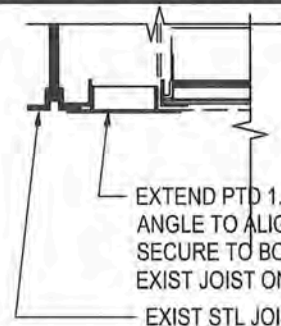
SECURE LAPS AT ALL FOUR SIDES AND TO BAR JOISTS.



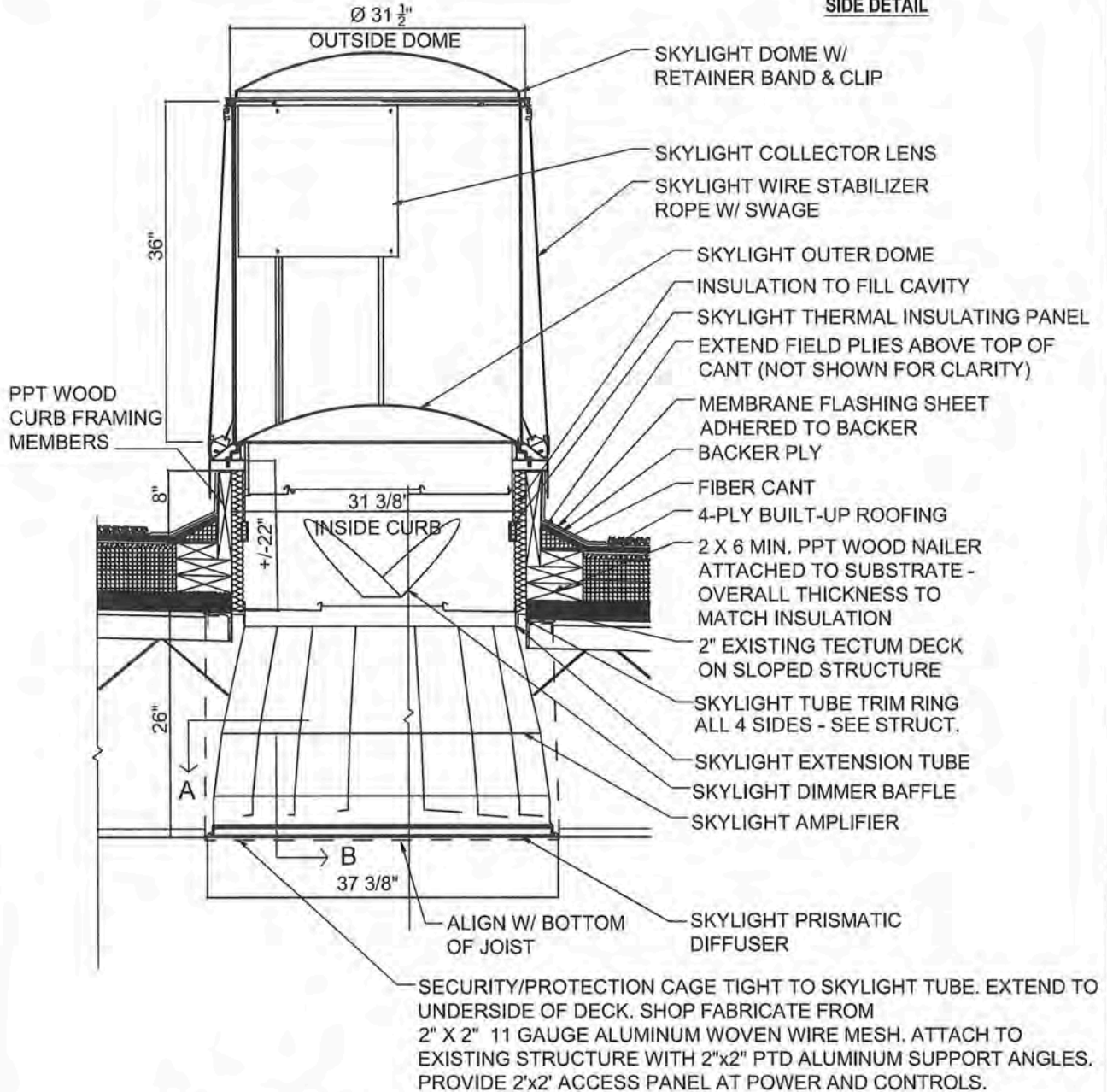
PLAN SECTION A



SECTION B



SIDE DETAIL



DETAIL AT TUBULAR SKYLIGHT AT GYM

NTS



THE OFFICE OF DESIGN AND CONSTRUCTION
8115 GATEHOUSE RD
SUITE 3500
FALLS CHURCH, VA 22042
571-423-2200

ROOFING
TYPICAL DETAILS DIV-7

NOV 2021

DETAIL NO:
07-26