

BID PROPOSAL

**CONTRACT NO. DMVA
42150101**

BID PROPOSAL INDEX

NOTICE TO BIDDERS

GENERAL INFORMATION

BASE BIDS

UNIT PRICES

BIDDER ORGANIZATION INFORMATION

CERTIFICATION AND BID SIGNATURE

NOTE: Please read all pages of this Bid Proposal. All pages of the Bid Proposal shall be returned and properly executed with sealed bid. Bid Proposal forms are supplied in duplicate, one to be submitted to the Department and the other for the Bidder's use and record.

NOTICE TO BIDDERS

Department of Military and Veterans Affairs, Bureau of Office Services, Procurement and Contracting, Building 0-47, Fort Indiantown Gap, Annville, Pennsylvania 17003-5002.

ProjectPre-Engineered Steel Storage Building

LocationScranton/Taylor FMS, 8 Stauffer Industrial Park,
Taylor, PA. 18517

Agency.....Department of Military and Veterans Affairs

BriefDescription..... Pre-Engineered Steel Storage Building

Contracting Officer: Tina Rebuck

Opening Date and Time..... August 3, 2018 at 2:00 PM

Contract Number..... DMVA. 42150101

Bid GuarantyPayable to the Commonwealth of Pennsylvania,
Department of Military and Veterans Affairs, in an amount not less
than ten (10%) percent of the bid.

Proposed Date of Completion300 Calendar Days from the Notice to Proceed

Period.....60 Days allowed from Bid Opening until Award of Contract

MANDATORY Vendor Registration: All Bidders must be registered to secure Plans and Specifications and must have a Current, Active Vendor Number. Register at www.pasupplierportal.state.pa.us



BID PROPOSAL

**Department of Military
and Veterans Affairs
Bldg. 0-47, Fort
Indiantown Gap
Annville, PA 17003**

Do not write in space below

Date: _____

Legal Review: _____

**CONTRACT NO. 42150101
GENERAL CONSTRUCTION
PRE-ENGINEERED
STEEL STORAGE
BUILDING
SCRANTON/TAYLOR FMS
TAYLOR, PA. 18517**

Bidder Name and Address:

Bidder Phone #

Bidder Fax #

Bidder Email:

Bidder Federal ID#

Bidder Vendor ID#

FLYER INFORMATION: Bidder acknowledges receipt of the following Flyer(s) and agrees they are part of this Bid Proposal.

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

THE BIDDER MUST TYPE/WRITE ITS TOTAL BID PRICE FOR EACH SEPARATE BASE BID ON THIS "BASE BID" SHEET. DO NOT SOLELY WRITE ANY ADDITIONAL OR DEDUCTED AMOUNT ON THE BASE BID LINE.

Base Bid:

For all **GENERAL CONSTRUCTION** the sum of

_____ Dollars (\$ _____).
(Written) (Figure)



BID PROPOSAL

**Department of Military and
Veterans Affairs
Bldg. 0-47, Fort Indiantown Gap
Annville, PA 17003**

Do not write in space below

Date: _____

Legal Review: _____

**CONTRACT NO. 42150101
ELECTRICAL
PRE-ENGINEERED
STEEL STORAGE
BUILDING
SCRANTON/TAYLOR FMS
TAYLOR, PA. 15817**

Bidder Name and Address:

Bidder Phone #

Bidder Fax #

Bidder Email:

Bidder Federal ID#

Bidder Vendor ID#

FLYER INFORMATION: Bidder acknowledges receipt of the following
Flyer(s) and agrees they are part of this Bid Proposal.

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

Flyer # _____ Issue Date: _____

THE BIDDER MUST TYPE/WRITE ITS TOTAL BID PRICE FOR EACH SEPARATE BASE BID ON THIS "BASE BID" SHEET. DO NOT SOLELY WRITE ANY ADDITIONAL OR DEDUCTED AMOUNT ON THE BASE BID LINE.

Base Bid:

For all **ELECTRICAL** **the** sum of

_____ Dollars (\$ _____).
(Written) (Figure)

BIDDER ORGANIZATIONAL INFORMATION

BIDDER ORGANIZATION (Check applicable box)

- The Bidder is a corporation, limited liability company, or partnership organized and existing under the laws of Pennsylvania and has been granted a certificate of authority to do business in Pennsylvania as required by the Business Corporation Law of 1988, as amended _____

OR

- The Bidder is a corporation organized and existing under the laws of _____ and **has or has not** (circle one) been granted a certificate of authority to do business in Pennsylvania as required by the Business Corporation Law of 1988 (15 Pa. C.S. §4121-§4131), as amended.

OR

- The Bidder is a limited liability company organized and existing under the laws of _____ and **has or has not** (circle one) registered to do business in Pennsylvania as required by the Limited Liability Company Law of 1994 (15 Pa. C.S. §8981-§8982), as amended.

OR

- The Bidder is a limited partnership organized and existing under the laws of _____ and **has or has not** (circle one) registered to do business in Pennsylvania as required by the Partnership Code (15 Pa. C.S. §8581-§8590), as amended.

OR

- The Bidder is an individual or partnership trading under a fictitious or assumed name and **has or has not** (circle one) registered under the Fictitious Names Act (54 Pa. C.S. §301-§332), as amended.

BIDDER RESIDENCE INFORMATION

Bidder has a bona fide establishment in Pennsylvania at which it was transacting business when the Notice to Bidders for this Project was issued?

If **“Yes”**, insert address below if different than address on page 1:

If **“No”**, insert Bidder’s office address if different than address on page 1.

CERTIFICATION AND BID SIGNATURE

To Department of Military and Veterans Affairs (DMVA), Annville, Pennsylvania,

In conformity with the plans and specifications prepared by the **PROFESSIONAL as** listed on the eMarketplace website under **solicitation number 42150101** and after an examination of the site of the work, and all the contract documents including issued Flyers, which are made a part hereof as if fully set forth herein, the undersigned (hereinafter "Bidder") submits this bid and certifies by signing below:

Date: _____

BIDDER AS AN INDIVIDUAL:

Witness:

By:

Contractor – Individual

BIDDER IS A PARTNERSHIP:

Witness:

By:

Contractor – General Partner

BIDDER IS A LIMITED LIABILITY COMPANY:

Witness:

By:

_____ Secretary

President

BIDDER IS A CORPORATION:

Attest:

By:

President

Secretary

INSTRUCTIONS TO
BIDDERS



ANNVILLE, PENNSYLVANIA

FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN THE REJECTION OF THE BID AS NOT RESPONSIVE.

SECTION 1. WORK TO BE PERFORMED. The Work to be performed is described in the Contract Documents. The Contract Documents may be inspected during regular business hours at the Department of Military and Veterans Affairs (DMVA), located at Fort Indiantown Gap, Building 0-47, Annville, Pennsylvania 17003-5002. Copies of the Contract Documents may be obtained through emarketplace website under solicitation 42150101.

SECTION 2. FAMILIARITY WITH PROPOSED WORK. The Bidder is responsible for examining the nature and location of the Work, the conformation of the ground, the soil and rock conditions, and the character, quality and quantity of the materials that will be required. The geotechnical report prepared for the Department, if one has been performed for the project, is available for review by all bidders. The Bidder shall also examine the proposed Contract Documents, including the plans, specifications, the Instructions to Bidders, Special Conditions (if applicable), and all other documents and data pertaining to the Project. After the award of the contract, the Contractor may not submit any claim alleging insufficient data, incorrectly assumed conditions, or misunderstanding with regard to matters for which no such clarification was sought during the bidding phase of the Project, as described further in the Instructions to Bidders of the Construction Contract.

SECTION 3. INTERPRETATION OF CONTRACT DOCUMENTS.

- A. Requests for Interpretation during the bid stage shall be submitted in writing to the Contracting Officer, whose name and address can be found in the Notice to Bidders. All Requests for Interpretation related to the proposed Work or proposed contract documents must be received, in writing, no later than close of business ten (10) days prior to the Bid Opening Date. Only written Requests for Interpretation received no later than ten (10) days prior to the date fixed for the opening of bids will be considered by the Department. If a request is received within 10 days of the bid opening date, the Department may, in its sole discretion, answer the request. Requests via emails shall not be considered "written" requests.
- B. NEITHER THE DEPARTMENT, THE PROFESSIONAL NOR ANY REPRESENTATIVE OF THE USING AGENCY SHOULD BE ASKED TO PROVIDE ANY ORAL INTERPRETATION TO ANY BIDDER REGARDING INTERPRETATION OF THE CONTRACT DOCUMENTS. ANY CONVERSATION BETWEEN A BIDDER AND EITHER THE DEPARTMENT, THE PROFESSIONAL, OR THE REPRESENTATIVE OF THE USING AGENCY FOR WHOM THE PROJECT IS BEING CONSTRUCTED, SHOULD NOT BE RELIED UPON BY ANY BIDDER, IS NOT BINDING UPON THE DEPARTMENT, AND SHALL NOT BECOME PART OF THE CONTRACT DOCUMENTS UNLESS THE INFORMATION SUBSEQUENTLY APPEARS IN A WRITTEN FLYER.
- C. The Department's response to any Request for Interpretation will be in the form of a written flyer signed by the Department. The Contracting Officer will forward all flyers to all Bidders that obtained plans and specifications for the Project. All flyers become a part of the Contract Documents, and all Bidders on any portion of the contract for the Project are bound by all flyers issued on the project.

SECTION 4. AWARD TO A FOREIGN BUSINESS. No contract will be awarded to a Bidder which is a foreign corporation, a foreign limited liability company, a foreign limited partnership, or which is operating under a fictitious or assumed name unless the Bidder has complied with, or agreed to comply with, the registration requirements under the Business Corporation Law of 1988 (15 Pa. C.S. §4121-§4131) and/or the Limited Liability Company Law of 1994 (15 Pa. C.S. §8981-§8982), and/or the Partnership Code (15 Pa. C.S. §8581-§8590), and/or the Fictitious Names Act (54 Pa. C.S. §301-§332).

SECTION 5. REIMBURSEMENT OF COSTS OF INSPECTOR GENERAL INVESTIGATION.

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

SECTION 6. SMALL DIVERSE BUSINESS PARTICIPATION

A. Overview - Minimum Participation Level.

1. The Department has established one minimum participation level (MPL) for utilization of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Veteran Business Enterprises (VBEs), and Service-Disabled Veteran Business Enterprises (SDVBEs) (together referred to hereinafter as Small Diverse Businesses) subcontractors, manufacturers, and suppliers for this project. This Small Diverse Business Participation (MPLs) applies when the amount bid exceeds \$50,000.

- i. The MPL is set forth in the Notice to Bidders. in the following form:
- ii.

Project No. DGS:	42150101	—
		MPL
.1	General Construction	7.5%
.4	Electrical	7.5%

2. If the Bidder is a Small Diverse Business firm, DGS will not credit the value of the Bidder's contract toward meeting the MPLs. All Bidders (including Bidders which are SDB) are required to comply with these Instructions to Bidders regarding Small Diverse Business Participation.
3. Bidders are not required to submit a form regarding the MPL or solicitation efforts with the Bid Package.
4. The Administrative Procedures, which are included in the Contract Documents, have a chapter titled "Small Diverse Business Participation." Should there be any conflict between these Instructions to Bidders and the Administrative Procedures, the Administrative Procedures govern.
5. Upon Notice of Award, the successful bidder shall have the option of choosing to "Opt-in" or creating and maintaining documentation on its "Good Faith Effort" to meet the Project's MPL. (See: subsection B(1) below). The Contractor will have the full duration of their contract to meet the MPL.
6. The Contractor's commitments toward the MPL will be calculated and credited as follows:
 - i. ONLY DGS-CERTIFIED SMALL DIVERSE BUSINESSES SHALL BE USED TO CALCULATE THE CONTRACTOR'S COMMITMENTS TO THE MPL.
 - ii. A Contractor's Small Diverse Business participation level is calculated by adding all dollar commitments to DGS-certified Small Diverse Business subcontractors of all tiers, DGS-certified Small Diverse Business manufacturers, and DGS-certified Small Diverse Business suppliers and dividing that total amount by the total contract award

price. Small Diverse Business dollar commitments will not be double counted (see Section 5(vii) below).

- iii. Small Diverse Business subcontractors performing at least sixty percent (60%) of the subcontract with their own employees will be credited toward the MPL at 100 percent of the total dollar value of the subcontract/supply contract. Any Small Diverse Business subcontract, where the subcontractor performs less than 60% of the subcontract, will not be credited toward the MPL.
- iv. Small Diverse Business stocking suppliers are credited at 60 percent of the total cost of the materials or supplies purchased. A stocking supplier is a regular dealer that owns, operates, or maintains a store, warehouse, or other establishment, in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.
- v. Small Diverse Business nonstocking suppliers are credited at only the amount of the fee or commission charged by the Small Diverse Business nonstocking supplier for assistance in the procurement of the materials and supplies provided the fees or commissions are reasonable and not excessive as compared with fees customarily allowed for similar services and with the understanding that under no circumstances shall the credit, for a Small Diverse Business nonstocking supplier, exceed 10% of the purchase order cost. A nonstocking supplier does not carry inventory but orders materials from a manufacturer, manufacturer's representative or a stocking supplier. In order for a nonstocking supplier to receive credit, it must perform a useful business function by engaging in meaningful work (i.e., negotiating price; AND determining quality and quantity; AND ordering materials; AND paying for the materials) and the fee or commission must be provided with the purchase order and the Small Diverse Business Utilization Report. Industry practices and other relevant factors will be considered.
- vi. Small Diverse Business manufacturers are credited at 100 percent of the total cost of the materials or supplies purchased.
- vii. All Small Diverse Business participation shall include all tiers of design and/or construction.
 1. The Contractor is allowed to use contract amounts at any tier of supply or subcontracting provided that the Small Diverse Business is the initial Small Diverse Business firm in the organizational hierarchy. Therefore, if the Contractor or any of its non-Small Diverse Business Subcontractors or Suppliers makes a commitment to a Small Diverse Business, the credit for the subcontract/purchase order commitment, regardless of the level or tier, shall be calculated as indicated in Section 5 and credited toward the Contractor's Minimum Participation Level.
 2. The dollar value of any commitment to a Small Diverse Business cannot be double counted. In the event that the Small Diverse Business whose entire subcontract value is counted towards the Contractor's Participation Level then subcontracts a portion of the work or supplies associated with this subcontract to another Small Diverse Business, the dollar value of the subcontract with/to this lower tier Small Diverse Business is NOT counted in the Contractor's Participation Level in order to prevent the duplicate counting of Small Diverse Business commitment dollars. In this case, the dollar value of this subsequent Small Diverse Business subcontract has already been included within the scope of work and dollar value of the Small Diverse Business commitment already counted as a part of the Contractor's Participation Level.

B. Upon Notice of Award.

1. The successful bidder shall, upon Notice of Award and receipt of the Construction Contract, determine whether to choose “opt-in” or to provide “Good Faith Effort” documentation of its efforts to meet the MPL by initialing the appropriate selection in Article 9 of the Construction Contract. (See Administrative Procedures for further information.)
 - i. Opt-in – A successful bidder selecting “Opt-in” agrees to meet or exceed the Project’s MPL by the time of the Close-out Inspection of the project.
 - ii. Good Faith Effort – A successful bidder selecting “Good Faith Effort” agrees to document its use of reasonable efforts to identify, solicit, and secure commitments with Small Diverse Businesses on all subcontractors, manufacturers, and suppliers greater than \$10,000 throughout the duration of the Project.
2. Article 9 of the Construction Contract lists both “Opt-in” and the “Good Faith Effort” options. The successful bidder shall select and initial the option of their choice. Failure to select an option will be deemed an incomplete Contract and DGS may consider this a failure to execute the Contract (See Sections 28 and 29).

C. Upon Contract Execution.

1. If Opt-in was selected, the Contractor has until the time of Close-Out Inspection to meet or exceed the MPL for the Project. This will be tracked through the Small Diverse Business Utilization Report submitted with each Application for Payment.
2. If the Good Faith Effort was selected, the Contractor must create and maintain documentation of its reasonable efforts to identify, solicit, and secure commitments with Small Diverse Businesses on all subcontractors and suppliers greater than \$10,000 throughout the duration of the Project. At a minimum, such documentation shall include the following (“Good Faith Effort documentation”):
 - i. A certification that the contractor accessed the DGS web site database of DGS-certified Small Diverse Businesses to identify DGS-certified Small Diverse Businesses for the subcontract or purchase order.
 - ii. A record of all companies solicited for the subcontract or purchase order that can perform the scope of work to be subcontracted or supply to be delivered, identifying any DGS-certified Small Diverse Businesses. If a subcontractor is not properly licensed or otherwise capable of performing the scope of work, they are not eligible to receive the subcontract. (A painting subcontractor, for example, may not be eligible to receive a subcontract to perform electrical work.)
 - iii. A record of all quotes received showing company name and address, contact person, telephone number, Small Diverse Business status, subcontractor, manufacturer, or supplier, scope of work to be performed or supply to be delivered, and the amount of the quote and identification of the selected subcontractor/manufacturer/supplier.
 - iv. A certification that the contractor negotiated fairly with responsive DGS-certified Small Diverse Businesses and, if commitments were not made, that such non-commitment related to the Small Diverse Business’ capability or price.

Upon notice from DGS, the Contractor will be required to submit, within ten (10) calendar days from the date such notice is received, the above Good Faith Effort documentation for review and compliance. Failure to submit such documents within the timeframe provided will result in a noncompliance entry into the Commonwealth’s Contractor Responsibility Program and may be considered a substantial breach of the Contract, as determined by the Department.

3. Small Diverse Business Utilization Report

i. The Contractor, regardless of the option it selects, shall submit a Small Diverse Business Utilization Report with each Application for Payment. Each Small Diverse Business Utilization Report must have current data (totals to date) identifying at least each element as follows:

1. Detailed information including but not limited to any subcontracts and purchase orders documenting the dollar value commitments, commission, or fees to Small Diverse Business firms to be used toward the satisfaction of the Project's MPL. All Small Diverse Businesses identified on the Utilization Report shall be retained on the Utilization Report throughout the duration of the Project.

2. Detailed information regarding any work that is claimed to be self-performed by the Contractor and therefore allegedly not eligible for subcontracting to a Small Diverse Business.

3. Construction Subcontracts and Purchase Orders:

a. All Subcontract/Purchase Orders awarded to date are
\$ _____

b. Commitments to Small Diverse Businesses totals to date:

- i. \$ _____ (dollars)
- ii. % _____ (percentage)

c. For each Small Diverse Business subcontract and purchase order awarded since the previous Application for Payment the:

- i. Identity and status of the Small Diverse Business as a MBE/WBE/VBE/SDVBE that will be performing the work; and
- ii. The type of work, service, or material to be performed/supplied; and
- iii. The amount paid to date on each Small Diverse Business subcontract/purchase order this month; and
- iv. The designation of Small Diverse Business stocking suppliers as either a MEP (i.e., mechanical, electrical, and plumbing) stocking suppliers or a General Construction stocking supplier; and
- v. The fee or commission paid to the nonstocking supplier. No MPL credit will be given if the fee or commission is not listed and, the maximum credit shall not exceed 10 percent of the purchase order cost.

ii. Failure to submit a Small Diverse Business Utilization Report with each Application for Payment will result in an incomplete Application for Payment and it being returned to the Contractor. An incomplete Application for Payment will not be processed.

D. Resources.

1. The Department is available for technical assistance to all Bidders submitting bids for this contract. Department certification of an entity as a Small Diverse Business means only that the applicant for certification has submitted information that qualifies it as a Small

Diverse Business in terms of its ownership and control. It does not imply, and no Bidder shall infer, that the Department has in any way investigated or approved the entity's competence to perform work.

2. Contact the Bureau of Small Business Opportunities at (717) 783-3119.

Bureau of Small Business Opportunities
611 North Office Building
Harrisburg, Pennsylvania 17125

SECTION 9. CONTRACT DETAIL. Where the Work is shown in complete detail on only a portion of a drawing or there is an indication of continuation, the remainder being depicted or described in an outline or schematic form, the Work drawn out in detail applies to other like portions of the structure.

SECTION 10. CONTRACT ERRORS OR CONFLICTS. If the Contractor, in the course of construction, finds any conflict, error or discrepancy on or among the Contract Documents, such conflict, error or discrepancy shall be immediately referred in writing to the Department and the Professional. The Professional, with appropriate input from the Department, will review the matter and issue an interpretation to the Contractor in writing within seven (7) calendar days after the Professional receives the Contractor's Request for Information.

SECTION 11. ADMINISTRATION OF CONTRACT. The Professional will assist the Department and/or the Department's designee, in administering the Construction Contracts. The Professional will review and execute (if acceptable) all Department forms that require the Professional's review and signature under the Contract. The Professional will also review submittals as provided in these Instructions. The Professional shall assist the Department, if requested, in the review of Extension of Time requests and claims of any type.

SECTION 12. PROFESSIONAL SITE VISITS. The Professional will attend the number of meetings listed in their Agreement. The meetings include Job Conferences and all special meetings and Project Site conferences required by the Department and/or the Department's designee during periods of active construction in accordance with the terms of their Agreement. The Professional or Professional's Consultants will visit the site for a full day, up to eight hours, at such intervals and duration as deemed necessary by the Department, to review the respective phases of the Work in order to achieve the requirements of each Contract, with a maximum number of visits as set forth in the Agreement. When directed by the Department, the Professional and Professional's Consultants will attend any and all meetings and job conferences that are required by the Department. A meeting on a given day is counted as one (1) meeting regardless of the number of attendees; however, a consultant will not be required to attend more than one meeting per thirty (30) days of the construction duration while work related to the Consultant's expertise is ongoing without an additional meeting being counted towards the number of meetings set forth in the Agreement. The Professional will review the progress of the Work, including the completeness of the construction contractors' installation drawings, and take actions necessary or appropriate to assist in achieving the compliance with the Contract Documents and submit a Progress Report.

SECTION 13. PROFESSIONAL ACCESS TO WORK. The Professional, its Consultants and authorized representatives shall have access to the Work at all times. The Contractor shall provide the facilities for such access so the Professional may perform its functions under the Contract Documents.

SECTION 14. PROFESSIONAL INTERPRETATION OF DOCUMENTS. The Professional is the initial interpreter of the requirements of the Contract Documents. The Professional will, within seven (7) days after receipt of a request, (in the form of a Request for Information) render an interpretation. All interpretations by the Professional will be consistent with the Contract Documents. In its capacity as interpreter, the Professional will exercise its best efforts to interpret the documents impartially. Any dispute regarding such interpretation shall be handled in accordance with the Disputes Article.

SECTION 15. REJECTION OR STOPPAGE OF WORK. Whenever the Professional observes deficiencies or observes the Contractor failing to execute the Work in accordance with the Contract Documents, the Professional will promptly notify the Contractor of all such deficiencies and will issue such notices of Non-Compliant Work that the Professional deems appropriate. The Professional will recommend rejection of work that does not conform to the Contract Documents and immediately notify the Department of the recommendation of rejection. The Professional will recommend stoppage of Contractors' work or special testing whenever such testing or stoppage is necessary, in the Professional's opinion, to achieve compliance of the finished Work with the Contract Documents.

SECTION 16. NON-CONFORMING WORK. If the Professional is required to design corrective work to remedy defective or nonconforming Work by the Contractor, the cost for any and all additional professional services shall be paid by the Contractor, provided that the Professional submits those costs to the Department and the Contractor within thirty (30) days after the completion of said additional services. The Department shall review the corrective work and/or drawings that are prepared by the Professional in order to determine if the corrective work and/or drawings fall within the original scope of the Contract.

SECTION 17. RECORD DOCUMENTS. On the day of Final Inspection, the Contractor shall deliver to the Professional a complete set of contract prints in PDF format, corrected with suitable markings to show all changes or variations from the original contract, including all items uncovered during the work and showing the details of the work as actually built, including but not limited to horizontal and vertical dimensional references of all concealed pipe, conduit and other lines and equipment.

SECTION 18. PROFESSIONAL NOT RESPONSIBLE FOR CONTRACTOR MEANS/METHODS/TECHNIQUES. The Professional is not responsible for the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work since these are solely the Contractor's responsibilities.

SECTION 19. PROFESSIONAL NOT RESPONSIBLE FOR CONTRACTOR ACTS OR OMISSIONS. The Professional will not be responsible for the acts or omissions of any Contractor, or any Subcontractor, or any of their agents or employees, or any other persons performing any of the Work.

SECTION 20. CONTRACTOR NOT AN INTENDED THIRD PARTY BENEFICIARY OF THE PROFESSIONAL AGREEMENT. The Contractor is not an intended third party beneficiary of the Professional Agreement between the Department and the Professional. Nothing in the Contract Documents between the Department and the Contractor should be construed to authorize any person not a party to the Professional Agreement to maintain any lawsuit involving that contract, unless otherwise provided by law.

SECTION 21. REPLACEMENT OF PROFESSIONAL. In case of the termination of the Agreement for Professional Services, the Department may appoint a new Professional whose status under the Contract Documents shall be that of the former Professional. The decision of whether or not to terminate a Professional and appoint a new Professional rests solely with the Department. Professional's authority to make recommendations under this paragraph, nor any decision made by the Professional in good faith to either exercise or not to exercise such authority shall give rise to any duty or responsibility of the Professional to the Contractor, or any Subcontractor, any of their agents or employees, or any other person performing any of the Work.

SECTION 22. PROCUREMENT STAGE INVESTIGATION AND DOCUMENT REVIEW: During the procurement stage, the Contractor had an affirmative duty to examine the nature and location of the Work, the soil and rock conditions and the character, quality and quantity of the materials that are required for the Work. Any geotechnical information available for review on the Project is provided for informational purposes only; it is not to be relied upon by the Contractor. The

Contractor also has a duty to carefully study and compare the Contract Documents for consistency and to the physical conditions of the job site. If the Contractor did not request a clarification during the bid stage with regard to the site conditions or discrepancies within the Contract Documents, the Contractor may not submit a claim after award of contract alleging insufficient data, ambiguity in the documents, incorrectly assumed conditions or misunderstanding.

SECTION 23. DUTY TO COORDINATE THE WORK WITH OTHER PRIME CONTRACTORS.

- A. The Contractor explicitly acknowledges that it has a contractual duty to coordinate the Work within their Contract with the Work to be performed on the Project by all other Prime Contractors.
- B. The Contractor agrees that this duty to coordinate exists between each Prime Contractor on the Project and that each Prime Contractor is an intended third party beneficiary of each Contract between the Department and each Prime Contractor.
- C. The Contractor agrees that their duty to coordinate the Work includes reviewing the other Prime Contractors' submittals for coordination purposes.
- D. The Contractor further agrees that the efforts of the Construction Manager (if one is used) and the Department to facilitate the coordination of the Work shall not release or in any way diminish the Contractors' duty to coordinate the Work.
- E. If the Contractor sustains any damage as a result of any act or omission of any other Prime Contractor having a Contract with the Department or through an act or omission of a Subcontractor of such Prime Contractor, the Contractor shall have no claim against the Department, the Professional or the Construction Manager for such damage, but shall have a right to recover such damage from the other Prime Contractor.
- F. If any other Prime Contractor on the Project sustains any damage through any act or omission of the Contractor or a Subcontractor of the Contractor, the Contractor agrees to reimburse such other Prime Contractor for all such damages and to indemnify and hold the Department, the Construction Manager and the Professional harmless from all such claims.
- G. The Contractor shall indemnify and hold the Department, the Construction Manager and the Professional harmless from any and all claims or judgments for damages and from costs and expenses to which the Department may be subjected or which it may suffer or incur by reason of the Contractor's failure to comply with directions promptly.
- H. The exercise of the right of the Construction Manager or the Department to permit or require others to perform Work in or about the construction site shall not relieve the Contractor from any liability for loss or damage, or from any of its obligations under this Contract. No agreement or arrangement between the Contractor and others as to a division or proportionate share of liability for loss or damage incurred, or of the cost of insurance shall in any way relieve the Contractor from any liability or damage, or from any of its obligations under this Contract.
- I. Each Prime Contractor shall afford other Prime Contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall properly connect and coordinate its Work with the Work awarded by the Department to other Contractors.

SECTION 24. PROJECT COORDINATION. Project Coordination shall be facilitated among the Prime Contractors, professional conduct and adherence to the Contract Specifications and the Instructions, including, but not limited to, the following subparagraphs, which shall not be construed to be the exclusive means of achieving a properly coordinated Project:

- J. Each Contractor acknowledges the complex nature of the Project, the sequential nature of the Work to be performed under all of the Prime Contracts and the concurrent operations of this Project.**
- K. Each Contractor shall become thoroughly familiar with the requirements of the Contract Documents, including the Instructions of the Contract, the Administrative Procedures of the Contract, the Project Schedule and the Scope of Work for the Project.**
- L. Close coordination shall be required of each Contractor with the Construction Manager, other Prime Contractors, the Department and others having an interest in the Project to assure that Work on-site, access to and from the site and the general conduct of operations is maintained in a safe and efficient manner, and that disruption and inconvenience to existing streets and the surrounding community is minimized.**
- M. Each Contractor is responsible for coordinating their Work with every Prime Contractor on this Project.**
- N. The Contractor shall, whenever conditions permit, proceed without delay and maintain the Project Schedule. All operations shall be conducted so as to comply with all applicable laws, ordinances and regulations.**
- O. The Contractor shall maintain free access to all buildings, gates and areas of the site for emergency vehicles, service vehicles and firefighting equipment and at no time shall block off or close roadways or fire lanes without providing auxiliary roadways and means of entrance acceptable to the Department.**
- P. There may be limited parking at the site. Each Contractor and their sub-contractors must limit temporary parking of company vehicles and storage of materials as can be accommodated within the limits of the construction site and staging area as directed by the Department unless noted otherwise within the Contract Documents. All transportation to the site is the responsibility of each Prime Contractor. Contractors shall not park in spaces reserved for State employees. If more than one ticket is issued to an individual for parking violations, the Department has the authority to prohibit the owner of the vehicle(s) from continuing work at the site.**
- Q. Prime Contractors shall work similar hours in order to prosecute the Work under an orderly and systematic means. If there is a disagreement between Prime Contractors relative to the normal work hours, the Department shall establish the hours to be worked by all Prime Contractors. No claim of hardship shall be made by any Prime Contractor as a result of the Department's decision.**
 - 1. Whenever the Contractor intends to depart from normal work hours, it shall notify the Department at least forty-eight (48) hours in advance, unless there is an emergency-type condition requiring immediate repair or attention. If such an emergency condition occurs, the Contractor shall provide immediate notification to the Department. Failure of the Contractor to give such timely notice may be cause for the Department to require the removal or uncovering of Work performed without the knowledge of the Department, at no additional costs or Extension of Time, regardless of whether or not the Work is deemed properly installed.**
- R. The Contractor shall coordinate the Work with all other Contractors as outlined in the Coordination Drawings so that interference between mechanical, electrical, architectural and structural Work, including existing services, will be avoided. The Prime Contractors shall also coordinate the Work so as to provide the maximum practical space for operation, repair, removal, and testing of equipment. The Prime Contractors shall keep pipes, ducts, conduit and the like as close as possible to ceiling slab, walls, and columns to take up a minimum amount of space. The Prime Contractors shall locate pipes, ducts, conduits and equipment so that they do not interfere with the intended use of eyebolts and other lifting devices.**

- S. Particular attention shall be given to coordination and correlation of submittals as to the requirements of the Contract Documents regarding:
 - 1. Motor size;
 - 2. Motor service connections for size and type of materials;
 - 3. Equipment size and supports;
 - 4. Piping routing;
 - 5. Penetration of materials and fire stopping; and
 - 6. Connections to another Contractor's Work.
- T. Contractors shall coordinate Work to determine exact locations of outlets, pipes, diffusers and pieces of equipment to avoid interference with properly installed Work.
- U. The Contractor shall be responsible for a complete operating system as designated within the Contract Documents. Major items for Mechanical Work are specified in Division 15 and Electrical Work in Division 16. This may not be the complete extent of this Work, however, since requirements may appear in other locations within the Contract Documents. Mechanical and Electrical Work shall be verified with other sections. Contractors performing that Work shall supply sufficient information for completing the system.
- V. As various areas or parts of the site and building are complete, or otherwise suitable for the subsequent Contractors to commence Work, those Contractors shall be allowed to deliver materials and start Work. Such phased commencement shall be in accordance with the Project Schedule. Prior to commencing Work at any area or part, certain contract requirements shall be met for that area or part, such as verification of conditions as specified. Material lay down areas shall be coordinated with the Department and other Contractors.

SECTION 25. COORDINATION. The Lead Contractor is principally responsible for the coordination of the Project Work. Each Contractor is to coordinate all of its Work with the Work of other Contractors for proper function and sequence to avoid construction delays. If necessary, in instances when the Lead Contractor and the other affected Prime Contractor(s), after due diligence, cannot agree on a coordination decision, the Department will upon request from one or more of the Prime Contractors, make a determination resolving the coordination issue and take whatever action(s) the Department deems necessary, including, but not limited to:

- 1. Withholding any payment otherwise due until the Contractor(s) comply with the Construction Manager's or the Department's direction; and/or
- 2. Directing others to perform portions of the Work and deducting the cost of the Work from the Contractor's Contract balance; and/or
- 3. Deleting through credit Change Orders any and all portions of the Work.

The Department's decision in no way releases the Prime Contractors from their continuing duty to coordinate the Work. The final coordination decision of the Department will be observed, accepted, and fully followed by all Contractors and their subcontractors on the Project, subject only to the disputes procedure set out in the Contract. The progress of the Work in accordance with the final coordination decisions of the Department shall not be delayed pending any such dispute proceeding.

SECTION 26. USE OF SITE. The Contractor shall confine its apparatus, the storage of its equipment, tools and materials, and its operations and workers to the limits of contract as permitted by law, ordinances, permits, the Contract Documents and the Department. The Contractor shall not unreasonably encumber the site with any materials or equipment. The Lead Contractor shall have the authority to identify the lay down area based upon the Project Schedule.

SECTION 27. MOBILIZATION. Mobilization limits shall be consistent with the description set forth in the Administrative Procedures. The following items are included as mobilization, and cannot be included separately on the breakdown:

Contractor's field office

Department's field office (unless otherwise specified in specifications) Heating, lighting and telephone for the field offices

Installation for the offices Installation of signs

Site survey

Construction fence, if required

Sidewalk bridge, where required and built to all applicable OSHA requirements Safety and first aid equipment

Temporary power setup Temporary power distribution Temporary water

Temporary sanitary

SECTION 28. JOB CONFERENCES. Job Conferences may be held as often as required, but shall be held at least bi-weekly and must be attended by all Contractors. Regardless of the status of the Work, all Contractors must have a representative authorized to make all decisions and representations affecting the Contractor attend each Job Conference. The Department and the Professional shall also attend every Job Conference. The Department shall schedule the dates and times of Job Conferences. Failure to attend bi-weekly Job Conferences or any other mandatory meeting (unless excused by the Department) constitutes a breach of this Contract.

Any delays or damages incurred by other Contractors due to the failure of a Contractor to attend the Job Conference may be deducted from the absent Contractor's balance if a Prime Contractor submits a request for such action to the Department in accordance with the Disputes Article.

SECTION 29. CONTRACTOR'S STAFF AND PHONE NUMBERS. Within ten (10) days of receipt of the Contract, the Contractor shall submit to the Department's Project Manager the New User Form with a maximum of three (3) proposed principal staff that will be assigned to the Project. This shall include the name, address, email address, and telephone numbers of the Contractor's Superintendent and other personnel assigned to the Project.

SECTION 30. DRAWINGS AND SPECIFICATIONS AT THE SITE.

1. The Contractor shall maintain in good order at the site, for the Department and the Professional, one (1) paper copy of all drawings and specifications. All addenda, contract modifications, change orders and requests for information shall be posted to these documents at the applicable locations. As appropriate, these documents will be updated daily to record accurately as-built conditions, selections and changes.
2. The Contractor shall also maintain at the site one (1) paper copy of approved shop drawings, catalog data, operating and maintenance instructions, certificates, warranties, samples and similar submittals. These shall be available to the Department and Professional at all times, and they shall be delivered to the Professional as part of the Operation and Maintenance Instruction Manuals.
3. The Contractor shall also maintain one (1) paper copy of approved coordination drawings, to include as-built conditions, selections and changes to be submitted to the Professional and included as part of the Operation and Maintenance Instruction Manuals. The Contractor shall include the value of the Record Drawings as a line item on its schedule of values, which shall be not less than 10% of the amount

included for mobilization. The amount included is subject to the approval of the Department.

SECTION 31. PROVISION OF LABOR AND MATERIALS. Unless otherwise specifically noted, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and all other facilities and services necessary for the proper execution and completion of the Work.

SECTION 32. RESPONSIBILITY FOR THOSE PERFORMING WORK. The Contractor is responsible to the Professional, the Department and all other Prime Contractors for the acts and/or omissions of all of its employees and all subcontractors, their agents and employees, and all other persons performing any of the Work under a contract or purchase order with the Contractor.

a. **EQUIPMENT AND MATERIALS.** The Contractor shall furnish and deliver the necessary equipment and materials in ample quantities and as frequently as required to avoid delay in the progress of the Work. The Contractor's materials or equipment shall not interfere with the orderly progress of the Work, nor endanger the lives of any operators or persons within the vicinity of the stored equipment or materials, nor to cause damage to the adjacent property or highways. Any damage resulting from the operations of such equipment to any person or property is the responsibility of the Contractor in accordance with the Insurance paragraph.

b. **SUPERVISION.** If a Contractor has more than one Contract on the Project, it must provide a separate Superintendent for each Prime Contract. The Contractor shall provide on-site supervision by an employee who shall act as the duly authorized and competent Superintendent. If the Contractor fails to comply with the provisions of this paragraph, the Department may: (1) withhold any payments which are or may become due to the Contractor; and/or (2) suspend the work at the expense of the Contractor, including the cost associated with the impact on the work of the other Prime Contractors; and/or (3) take a credit for each day the Contractor did not have the approved Superintendent on site.

1. **ON SITE:** This Superintendent shall be on-site during the progress of the Work, including any time when any Work is being performed by any Prime Contractor or any subcontractor that will impact the Work of the Contractor. The Superintendent shall represent the Contractor, and all communications given to the Superintendent shall be binding as if given to the Contractor. The Superintendent must attend all Monthly Schedule Update Meetings and every bi-weekly job conference. The Monthly Schedule Update Meetings shall be scheduled and chaired by the Superintendent for the Lead Contractor.
2. **QUALIFICATIONS:** At the Initial Job Conference, the Contractor shall submit to the Department the name and qualifications of its Superintendent. The Superintendent must meet the qualifications in the specifications and be acceptable to the Department. The Contractor shall not change its Superintendent at any time during the Project without the prior written approval of the Department, and must submit to the Department, in writing, justification for the change, along with the name and qualifications of the individual whom the Contractor proposes to be the new Superintendent. The Department reserves the right to require a change in the Superintendent if the Superintendent's performance is deemed by the Department to be inadequate.

SECTION 33. GOOD ORDER AMONG EMPLOYEES.

The Contractor shall enforce good order and conduct among its employees at all times. Every employee shall be skilled in the performance of work assigned to that employee. All construction personnel shall be respectful of all Commonwealth employees and the general public.

- I. Any incidents of disrespect, verbal abuse, threatening statements, acts indicating a violation of the Contractor's Drug and Alcohol policy, unwelcome comments, unwelcome interaction or any form of harassment from any construction personnel toward any Commonwealth employee, designee employees, or the general public is strictly prohibited. Any such act shall constitute sufficient cause for the Department to demand that the Contractor dismiss the person(s) from the job site.
- II. If any Contractor's personnel ignores or refuses to take action on any requirements of the Contract Documents, ignores or refuses to take immediate action to correct any endangerment to the health and safety of the public, as solely determined by the Department then this action and/or inaction shall be sufficient cause for the Department to demand that the Contractor dismiss the person(s) from the job site.
- III. When, in the sole determination of the Department, it would be in the best interest of the Project and the Commonwealth to have a Contractor's personnel removed from the Project for the reasons described above, then the Department may demand that the Contractor dismiss from the job site. Any violation is sufficient cause for the Department to direct that the Contractor remove such person from employment on the Project, and direct that they shall not be re-employed on that Project without the consent of the Department. Such actions taken by the Department shall not constitute grounds for a delay claim. The Department will not be responsible for any delays caused to the Project due to any individual being removed from the Project.

SECTION 34. PERMITS AND FEES. In compliance with the Pennsylvania Construction Code Act (PCCA), 35 P.S. §7210.101 to §7210-1103, as amended (a.k.a. Uniform Construction Code Statute or UCC), only the Department of Labor and Industry has jurisdiction for plan and specification review and inspection authority over all State-owned buildings and facilities. Consequently, Prime Contractors on Department projects shall not obtain any building permits from local authorities. The Contractor, shall, however, continue to obtain and pay all fees for all other necessary permits, licenses and certificates required by law or otherwise for the proper execution and completion of its Work. The Contractor shall furnish proof of payment for all such items, or proof that no such items are required. This proof must be furnished prior to the second Invoice. The Contractor will be reimbursed for the actual cost of such items by change order and the Contractor will not be entitled to any mark-up on the items unless otherwise authorized by the Department.

SECTION 35. SURVEYS, LAYING OUT AND EXECUTION OF THE WORK

- I. The Contract Drawings shall be used for all dimensions in laying out the Work under this Contract.
- II. Each Prime Contractor is responsible for laying out their work from the points established by the drawings.
- III. The Contractor shall utilize a competent licensed surveyor to lay out the Work from the initial points established on the drawings.
- IV. The surveyor shall take as a basis the figures on the plans, and shall lay out all intersections, all building lines at corners and centers, test and check all elevations and levels, locate levels and plumb lines of floors, walls, beams and columns and other parts of the construction as the Work progresses.

- V. All Work of every description shall be laid out by the Contractor, who is solely responsible for its correctness. The Contractor shall pay for all expenses in connection with this Work.
- VI. The Contractor shall furnish approved copies of all information (site plans, technical data, topographic surveys, Record Drawings, etc.) to other Prime Contractors as necessary for the purpose of coordination of the Work. The Contractor shall submit one copy of its survey notes to the Department for record keeping. Submission of the survey notes does not relieve the Contractor of its duty to identify discrepancies on the site or in the Contract Documents.
- VII. All significant monuments and benchmarks identified by the Contractor shall be preserved for use by other Contractors. Receiving these monuments and benchmarks from another Contractor does not relieve each Contractor of the responsibility for its own layout, including specific layout required by applicable sections of the Contract Documents.

SECTION 36. DISCREPANCY OR INTERFERENCE WITH OR BY THE WORK OF OTHER CONTRACTORS.

Since the proper execution or results of any part of the Contractor's Work will depend upon the Work of other Prime Contractor(s) (or such other Prime Contractor's Subcontractor(s)) the Contractor shall inspect and promptly report in writing to the Professional, the Department and/or the Department's designee, and the Contractor(s) whose Work is allegedly incorrect describing any discrepancies, defects or delays in the Work done by other Prime Contractor(s) that render it unsuitable for such proper execution and results. If the Contractor begins physical work, the Department assumes that the Contractor has inspected and reported any of these discrepancies.

1. In the event that any Prime Contractor commences Work, failure of the Contractor to so coordinate, inspect and report constitutes an acceptance of the other Prime Contractor's Work as fit and proper to receive its Work. This excludes defects that may develop in the other Prime Contractor's Work after the execution of the Contractor's Work. If such defects occur, the Contractor who installed the defective Work shall be responsible to correct its Work accordingly.
2. The Contractor's Work shall be conducted so as to not interfere with the Work of any other Contractors. In the event that any Prime Contractor does not complete the various portions of the Work in cooperation with the other Prime Contractors, and as a result, causes damages or injury to any other Prime Contractor, the damaged or injured Prime Contractor may submit a request for the Department to withhold funds, or settle by contract or arbitration such claim or dispute in accordance with the provisions of the Dispute Article of these General Conditions.
3. Each Contractor shall be liable for all damage or destruction caused directly or indirectly (including, but not limited to delay and inefficiency claims) by its operations to all parts of the Work, both temporary and permanent, and to all adjoining property.

SECTION 37. EXISTING UTILITIES AND SERVICES.

1. The Contractor shall comply with all notification requirements established by applicable law relative to protection of underground utilities and shall also check the location of existing utilities required to remain in place, including those overhead or underground, and take all necessary precautions to prevent injury or damage during the performance of the Work.
2. Each Contractor doing excavation work is responsible for costs associated with locating all existing underground utilities prior to commencing excavation, including utilities that are owned and operated by the Department of General

Services or the Client Agency.

3. Each Contractor shall be responsible for the associated cost of any utility interruption and repair due to this excavation if the utility location was not requested, and/or proper location procedures were not performed and/or followed prior to commencing excavation.
4. The Contractor responsible for damaging the utility shall immediately notify the utility company and the Department and assume the cost of restoring the service of any utility disrupted due to excavation, or any Contractor action, whatever the circumstance. The Department reserves the right to immediately restore the service of any utility disrupted due to actions of a Contractor and to deduct the cost of such restoration from the responsible Contractor's next Invoice.
5. Utilities and/or other services, which are shown, or not shown but encountered, shall be protected by the Contractor from any damage from any Work and operations of the Contract, unless or until they are abandoned. If the utilities or services are not abandoned at time of damage, the Contractor shall immediately assume the cost of repairing any damage from its Work or operations and assume the cost of restoring the utilities and services to the condition that existed prior to the damage.
6. The Contractor and Subcontractor of any tier shall be responsible for all damage to the Project including the existing building and grounds due to its operation under this Contract. Repair or replacement of damaged items shall be to the satisfaction of the Department.

SECTION 38. INTERRUPTION OF EXISTING SERVICES: Whenever it becomes necessary to interrupt existing services in use by the Client Agency, such as sewer, water, gas and steam lines, and electric service, the Contractor responsible for working outside of normal working hours shall perform the Work during such hours, as required by the Department in coordination with Client Agencies or other tenants, so as to complete the work and restore all existing services with minimal interruption or disruption to the Department, Client Agencies or other tenant. The Contractor responsible for the Work shall continue its work on a twenty-four (24) hour basis until the Work is completed and the service restored, or at such alternate time required by the Department, its designee, or the Client Agency or other tenants. Before beginning such Work, the Contractor shall request and receive approval from the Department to establish a time when interruption of the service will cause a minimum of interference with the activities of the Client Agency. The Contractor's request to interrupt ANY SERVICE must be submitted to the Department in at least FIFTEEN (15) CALENDAR DAYS PRIOR to the date of the desired interruption.

SECTION 39. CONTRACTOR PERFORMING EXCAVATION OR DEMOLITION. The Contractor performing excavation or demolition work shall fully comply with the requirements of the Pennsylvania One Call Act (Act 287-74, approved December 10, 1974, as amended) relative to protection of underground utilities, to the extent that this language conflicts with Act 287-74, the statutory language controls. Protection of underground utilities shall include, but not be limited to:

1. Ascertaining the approximate location and type of utility lines adjacent to and within the contract limits by inspecting drawings or obtaining a list of utility companies' lines adjacent to and within the contract limits from the County Recorder of Deeds and then contacting the utility company.
2. Three (3) business days before excavation or demolition, request information from the utility companies regarding the steps Contractors should take to avoid damage.
3. Provide the Department and each equipment operator or blaster with information obtained in (A) and (B) above.

4. Report to the Department and the utility company any damage to utility line made or discovered in the course of the work.
5. Alert the Department and any occupants of premises as to emergency created or discovered.
6. Provisions of (A), (B) and (C) do not apply in an emergency. An emergency is any condition constituting a clear and present danger to life or property caused by escaping gas, exposed wires or other utility line breaks or defects.
7. Each Contractor shall be responsible for all dewatering as noted under Environmental Quality Control and per the specifications.

SECTION 40. OBSERVATION AND/OR INSPECTION OF THE WORK BY OTHERS. Observation of the Work by the Department or observation/inspection of the Work by the Professional shall not relieve the Contractor of full responsibility for completing the Work in accordance with the Contract Documents. Work performed without direct observation by the Department or Professional shall not relieve the Contractor of full responsibility for completing the Work in accordance with the Contract Documents. The Contractor's responsibilities include, but are not limited to, performance, supervision, scheduling and coordination of the Contractor's Work.

SECTION 41. COORDINATION DRAWINGS FOR SLEEVES AND OPENINGS.

1. Contractors requiring sleeves and openings for their work in any deck, concrete slab or wall shall furnish to the Department and all other Prime Contractors involved a complete set of location sketch drawings showing size and shape of openings. An electronic set of the Contract Drawings is available in eMarketplace. Each Prime Contractor must complete these sketch drawings in accordance with the construction schedule. Each Prime Contractor is responsible for reviewing every other Prime Contractor's drawings so that there will be no interference and/or conflict with its portion of the Work. Any potential conflict or interference shall be reported in writing to the Lead Contractor, with copies to the Department and the Professional. The Lead Contractor is principally responsible for coordinating and resolving any interferences and/or conflicts identified by the Prime Contractors. Disputes arising out of this paragraph shall be resolved in accordance with the Coordination Disputes paragraph.
2. The responsibility for identifying and dimensioning floor, wall, and ceiling systems penetrations lies with the Contractor whose Work penetrates these systems. The location, elevation, and dimensions of the opening, as well as installation of sleeves, fire safing, escutcheons and inserts shall be the responsibility of the Contractor requiring the opening or penetration. All Prime Contractors whose Work encompasses concrete, masonry, and ceiling installation shall provide openings required by other Contractors as agreed to in the previous paragraph.
3. The need for the opening or penetration, as well as the details, shall be given to the appropriate Contractor no later than seven (7) days prior to the wall, floor, or ceiling system being formed or installed, based on the current progress of the Work. The Contractor will be responsible to maintain the coordination of all penetrations during the construction with each other Contractor.
4. Any Contractor who fails to provide adequate notification or details to the wall, floor or ceiling Contractor shall be responsible for providing the openings in accordance with the provisions of the Cutting and Patching paragraphs.
5. Cutting and Patching of penetrations through existing systems or through systems completed earlier in the Project are the responsibility of the Contractor

requiring the penetration.

6. Cutting of metal deck in floors and roof openings is the responsibility of the Contractor requiring the opening. Deck shall not be removed until the day the penetration is to be made. The Contractor shall verify that conduits, piping or structural components installed above or below the deck are clear of the opening prior to cutting and patching.

7. At all openings that create a potential safety concern, the Prime Contractor who created the opening shall be responsible to provide adequate and safe protection.

a. CUTTING AND PATCHING OF NON-ROOF SYSTEM WORK. The Contractor shall, at its own cost, do all cutting, fitting and/or patching of existing materials required for its Work to the minimal extent necessary in accordance with the Contract Documents or to make its several parts fit together properly, and fit it to receive or be received by work of other Contractors. Any cutting, patching or excavation by the Contractor shall be supervised and performed in a workmanlike manner that will not endanger persons nor damage or endanger the Work or any fully or partially completed construction of any other Prime Contractor. The Contractor making the cut shall be responsible for restoration of work or any adjacent repairs. Any cost incurred by another Prime Contractor or the Department due to non-conforming or improperly sequenced work shall be borne by the Prime Contractor responsible therefore. Any damages to the new or existing facility shall be borne by the Contractor responsible for the damage.

b. CUTTING AND PATCHING OF ROOF SYSTEMS. Unless otherwise specified, each Contractor is responsible for its own cutting and patching of existing roof systems necessitated by its Work. The cutting and patching must be performed by a qualified Contractor/Subcontractor. The cutting and patching must maintain any current warranty or bond on the roofing, and, whether under warranty or not, must be done in accordance with the manufacturer's written directions.

42. CLEANING THE PROJECT.

1. Each Prime Contractor shall keep the building and grounds maintained free from accumulations of waste materials, rubbish and debris.

2. The Contractor shall maintain a clean and safe passageway for the Department, the Professional and others utilizing the facility.

3. Each Contractor shall insure that their Work shall not damage streets connecting to the Project, which shall be protected from mud, sand, and stones/gravel. Streets and adjacent property sites shall be kept free from run-off, litter, and/or debris in any form from the project site. Mud, litter, and/or debris from the construction site that appears on adjacent property sites shall be removed immediately. All mud collected on vehicle tires shall be removed by each Contractor before leaving the construction area. If any mud or debris from the project site collects on the streets, it shall be removed immediately by the responsible Contractor to prevent any hazards to vehicular or pedestrian traffic, as well as from entering the storm sewer system. All streets and property sites adjacent to the project site shall be cleaned of construction related debris, dust, litter, and mud daily.

4. Each Contractor is prohibited from discharging any waste products from concrete trucks or from concrete coring work, or any other unsuitable materials, fluids or other products on the site, or into the storm sewer system.

5. If the responsible Prime Contractor fails to comply with these requirements, the Department reserves the right, with twenty-four (24) hours prior notice to the responsible Prime Contractor, to assign another Contractor to clean and/or remove mud, trash, litter, debris, or any unauthorized discharge from the project and/or the adjacent streets or properties. In such case, the cost of the cleaning and/or removal, or mobilization for cleaning and/or removal shall be deducted by the Department from the responsible Prime Contractor's next Application for Payment.

6. The Contractor, and subcontractors of any tier, shall be responsible for and include in its bid, the cost for cleanup and removal from the site of its identifiable debris including, but not limited to, bulky debris, packaging containers, unused materials and equipment, and materials unsuitable for disposal by standard commercial procedures (i.e., masonry and concrete materials, crates, combustible items, etc.).

7. If the Contractor(s) fails to maintain a satisfactory cleanup program, the Department will issue a twenty-four (24) hour notice of deficiency. If the Contractor does not respond to the notice from the Department, then the Department shall arrange for the performance of the cleanup and backcharge the Contractor(s) for all costs associated with the cleanup.

8. All construction salvage materials, not including items specified elsewhere to be returned to the Department, become the property of the Contractor and shall be taken from the premises. On-site storage of materials and equipment, other than for use in this Project, will not be permitted.

9. No rubbish or debris shall be dropped from a height of more than six feet, or thrown out of any window or opening without a chute.

10. The following, which is not all-inclusive, lists the cleaning levels required by each Contractor as applicable to the scope of Work included in its Contract prior to Final Inspection:

11. Remove labels which are not required as permanent labels;

12. Clean transparent materials, including mirrors and window/door glass, to a polished condition;

13. Remove substances which are noticeable as vision-obscuring materials;

14. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of dust, stains, paint splatters, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition;

15. Clean concrete floors; in non-occupied spaces, broom clean; remove all stains, marks, paint, rust, etc. caused by construction activities.

16. Clean plumbing fixtures to a sanitary condition, free of stains, including those resulting from water exposure; and

17. Clean mechanical and electrical equipment, ductwork and replace all filters.

18. Prior to Final Inspection, in addition to the cleaning specified above, the site shall be prepared for occupancy by a thorough cleaning, including removal of all trash, rocks, wood and / or debris as required. Roadways and sidewalks shall be washed and swept clean. These activities shall be coordinated by the Lead Contractor.

19. Before the acceptance of the Project by the Department at the Final Inspection, all visible finished surfaces and materials shall be thoroughly cleaned and/or retouched by the responsible Contractor at its own cost and shall be left in a clean and unblemished condition to the satisfaction of the Department. Surfaces that are to be finished shall have all plaster, mortar and other surplus materials removed before beginning painting, varnishing and other finishing.

SECTION 43. REPAIR OF DAMAGED WORK. The Department shall coordinate the repair of all new Work as well as existing Work required remaining but which becomes damaged during the course of the Work. This repair work shall include, but not be limited to, restoration of surfaces to the original condition, grading, landscaping or seeding, pavement markings and refinishing.

SECTION 44. CHASES AND OPENINGS. The General Contractor (.1) or, if no General Contractor, the Contractor indicated in the Contract Documents will construct or have built into new walls, new partitions and new floors, all such chases and openings as are required for the Project. Each Prime Contractor will be responsible to confirm that the chases and openings affecting its Work are installed in accordance with the drawings submitted to the General Contractor.

SECTION 45. CHASES AND OPENINGS AFTER CONSTRUCTION OF WALLS. If cutting of chases and openings is required after construction of walls, partitions or floors is completed, the Department may require the Work to be performed in such a manner as to result in unmarred Work, even to the extent of requiring the removal and rebuilding of walls and partitions, all of which shall be at the sole cost of the responsible Contractor.

SECTION 46. TESTS. If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to be inspected, tested or approved, the Contractor shall give the Department timely notice of its readiness and of the date arranged, so the Department may observe such inspection, testing or approval. The Contractor shall be responsible for scheduling such inspections, tests and approvals and shall bear all costs of such inspections, tests and approvals, unless otherwise provided.

1. All expenses incurred in the collection, packing and delivering of samples or materials or equipment to the Project site shall be paid for by the Contractor.
2. The Contractor shall pay the costs of transporting samples from the Project site to the laboratory and for the testing of same, except where otherwise noted, specifications, or called for in the Contract drawings.
3. Approved samples to be incorporated in the building shall be returned to the Project site by the testing laboratory under the supervision of the Contractor.
4. The Contractor shall bear all costs of such inspections, tests and approvals, including such assistance, labor, electricity, fuels, storage, apparatus and instruments as are normally required for examining, measuring and testing any materials or Work and shall supply samples of materials, before incorporation in the Work, for testing as may be selected and required by the Department or the Professional.
5. Prior to testing, inspection or verification, the Department may require sign-off by the Contractor's representative affirming that the item of Work or installation is complete and ready for such testing, inspection or verification.
6. Work requiring testing, inspection or verification of probable compliance of Work shall not proceed to be concealed, covered or closed up until approval is given by the Department. Examples of work to be reviewed before being concealed include but are not limited to: sub-grades prior to backfilling, verification of rebar and formwork prior to placing concrete, and installed Work in concealed spaces before the space is closed.
7. The non-productive downtime or delay in an operation required to provide the

reasonable opportunity for testing or verification by the Department constitutes a portion of the Contract Work and is included in the Contractor's contract price. No claim for additional compensation will be allowed related to establishment and timely observation of testing or verification of Work.

8. Testing or verification by the Department shall in no way relieve the Contractor of its obligation to meet all the requirements of the Contract Documents.

9. Contractor is responsible for all Quality Control testing as specified in the Contract Documents.

a. If, after the commencement of the Work, the Department determines that any work requires special inspection, testing or approval not included in the Tests, the Department will direct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as in the Tests Paragraph.

b. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, or with respect to the performance of the Work, with laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, the Contractor shall bear all costs thereof, including the Professional's additional services made necessary by such failure.

c. If the work is in compliance, the Department shall bear such costs and an appropriate change order shall be issued to the Contractor.

SECTION 48. CERTIFICATES OF INSPECTION. The Contractor is responsible to secure any required certificates of inspection, testing or approval. Such required certificates of inspection, testing and approval include those required by the UCC. The Contractor shall deliver such certificates to the Professional and the Department within seven (7) days after the Contractor secures the certificate.

SECTION 49. OBSERVATION OF TESTING. The Professional and, where required by the Uniform Construction Code, Labor and Industry, shall observe the inspections, tests or approvals required by the Tests and Special Testing Paragraphs, and it shall be the Contractor's responsibility to serve sufficient notice to the Professional and where required by the UCC, to Labor and Industry, of such inspections, tests or approvals to enable the timely inspection of the Work without impacting the project schedule.

1. UCC REQUIRED TESTING OBSERVATION AND/OR INSPECTION.

When the UCC requires any special testing to be observed, inspected and approved by the Department of Labor and Industry, each respective Prime Contractor shall be responsible to contact Labor and Industry sufficiently in advance to allow Labor and Industry to schedule such observation, inspection and approval of such testing. Each Prime Contractor is responsible for determining whether the UCC requires the Department of Labor and Industry's approval of the testing. The Work shall remain accessible and exposed for inspection by Labor and Industry.

SECTION 50. EFFECT OF TESTS. Neither the observations of the Professional nor inspections, tests or approvals by persons other than the Contractor relieve the Contractor from its obligations to perform the work in accordance with the Contract Documents.

SECTION 51. ENVIRONMENTAL QUALITY CONTROL. The Contractor and its Subcontractors shall perform their work in a manner which minimizes the possibility of air, water, land and noise pollution.

1. Each Contractor shall be responsible for all dewatering to prevent surface water and ground water from entering excavations (including foundations and drilled piers), from ponding on prepared subgrades and from flooding the Project site and surrounding areas.
2. Each Contractor shall be responsible to protect subgrades from softening, undermining, washout, and damage by rain or water accumulation. Each Contractor shall reroute surface water runoff away from excavated areas. No Contractor shall allow water to accumulate in excavations. No Contractor shall use excavated trenches as temporary drainage ditches.
3. Each Contractor shall be responsible for installing a dewatering system to keep subgrades dry and convey ground water away from excavations. Each Contractor shall maintain the dewatering system until dewatering is no longer required.

SECTION 52. SOLID WASTE. Storage, collection, transportation and final disposal of solid waste shall be in accordance with the Solid Waste Management Act regulations and standards of the Department of Environmental Protection (DEP). Immediately upon the effective date of the contract, the Contractor shall begin to obtain, at its cost, the necessary permit(s) from DEP and conduct waste disposal on site approved under this permit. A copy of this permit must be submitted to the Department before commencing waste disposal. A record of receipt of the waste material that is signed by the waste company certified to receive the waste material acknowledging receipt and proper disposal must be provided to the Department.

SECTION 53. COMPLIANCE WITH STATUTES & REGULATIONS ADMINISTERED BY DEP. The Contractor shall comply with all statutes and regulations of the Commonwealth of Pennsylvania concerning environmental quality control administered by DEP. These statutes and regulations include those listed in the Environmental Statement set forth in the Instructions to Bidders (which is included as part of the Contract Documents) and, but not limited to, the Clean Streams Law, the Clean Water Act, Pennsylvania Sewage Facilities Act, Air Pollution Control Act, Surface Mining Conservation and Reclamation Act, Bituminous Coal Open Pit Mining Conservation Act, Dams and Encroachments Act, Water Well Driller's Act, Water Works Act and Atomic Energy Act, all as amended to date. The Contractor is responsible for any violations and shall secure all required permits. Erosion control measures are shown on drawings and specifications and/or specified in the General Requirements. An erosion control permit, if required, will be obtained by the Professional.

SECTION 54. BURNING OF MATERIALS. Burning of materials from clearing and grubbing operations, periodic and final clean-up, and all related construction, shall be governed by local codes and ordinances and/or DEP regulations. For each day that the Contractor may contemplate open burning, it shall secure approval from DEP. Failure to secure permission for open burning will require the Contractor to remove material from the project site and dispose of it in a manner acceptable to DEP.

SECTION 55. SUSPENSION FROM METAL ROOF DECKS – NEW AND EXISTING. Ductwork, conduit, ceiling systems, lighting fixtures or any other miscellaneous equipment shall not be suspended from metal roof decks. These components shall only be suspended from the structural members or a suspension system supported by the structural members. All concentrated loads must be submitted for review by the Professional. If the concentrated loads are not approved, the Prime Contractor furnishing the equipment must provide an acceptable means of distributing the load.

- a. **ASPHALT OR TAR KETTLES.** Asphalt or tar kettles shall not

be used inside of or on the roof of any building. Fired kettles shall not be left unattended. There shall be at least one portable fire extinguisher with a minimum 20 B: C rating within thirty feet of each fired kettle and one additional portable fire extinguisher with the same rating by the work area.

b. **INSULATION.** All insulation incorporated into the project **must** contain the minimum percentage of post-consumer recovered paper or recovered material as shown below for the applicable product:

<u>MATERIAL TYPE</u>	<u>PERCENT BY WEIGHT</u>
Cellulose loose – fill and spray on	75% post-consumer recovered paper
Perlite Composite Board	23% post-consumer recovered paper
Plastic rigid foam, polyisocyanurate/polyurethan	
Rigid Foam	9% recovered material
Foam-in-Place	5% recovered material
Glass Rigid Foam	6% recovered material
Phenolic Rigid Foam	5% recovered material
Rock Wool	50% recovered material

c. **ENFORCEMENT OF INSULATION REQUIREMENT.** The Contractor may be required to provide the Commonwealth with documentary evidence that the insulation provided for the Project was produced with the required minimum percentage of post-consumer recovered paper or recovered material.

d. **LANDSCAPING PRODUCTS RECYCLED CONTENT.**

1. **REQUIREMENT:** All landscaping products offered by the Contractor or included in the final product and sold to the Commonwealth **MUST** contain the minimum percentage of post-consumer and recovered material content as shown below for the applicable products:

LANDSCAPING PRODUCTS	RECOVERED MATERIAL CONTENT
Hydraulic Mulch: Paper	100% (post-consumer) 100% (total)
Compost Made From Yard Trimmings and/or Food Waste	Purchase or use compost made from yard trimmings, leaves, grass clippings and/or food wastes for applications such as landscaping, seeding of grass or other plants, as nutritious mulch under trees and shrubs, and in soil erosion control and soil reclamation. The Department further recommends implementing a composting system for these materials when agencies have an adequate

Garden Hose: Rubber and/or Plastic	60% (post-consumer)
SOAKER HOSE Rubber and/or Plastic	60% (post-consumer)
Lawn and Garden Edging: Rubber and/or Plastic	30% (post-consumer)/30-100% total
LANDSCAPING PRODUCTS	RECOVERED MATERIAL CONTENT
Landscaping Timber and Posts: HDPE Mixed Plastics/Sawdust HDPE/Fiberglass Other Mixed Resins	25% (post-consumer)+50% (recovered) 50% (post-consumer)+50% (recovered) 75% (post-consumer)+20% (recovered) 50% (post-consumer)+45% (recovered)

- A. **POST-CONSUMER MATERIAL**: Any product generated by a business or consumer that has served its intended end use, and that has been separated or diverted from solid waste for the purposes of collection, recycling and disposition.
- B. **RECOVERED MATERIAL**: Refers to waste materials and by-products which have been recovered or diverted from solid waste, but does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.
- C. **CONTRACTOR'S CERTIFICATION**: Contractor certifies that the landscaping product(s) which the Contractor is offering contains the required minimum percentage of post- consumer and recovered material content as shown in the above chart for the product.
- D. **MANUFACTURER'S CERTIFICATION**: In addition to the Contractor's Certification, a Manufacturer's Certification must be completed and signed by the manufacturer before payment will be made to the Contractor for the delivered items. A Manufacturer's Certification form identical to the form shown below must be used. Contractors are not required to submit the completed and signed Manufacturer's Certification form with their bid or proposal. The Commonwealth shall have no obligation to pay for the item(s) until a properly completed and signed manufacturer's certification is submitted for the delivered item.
- E. **ENFORCEMENT**: The Contractor may be required, after delivery of the landscaping product(s), to provide the Commonwealth with documentary evidence that the landscaping product(s) were in fact produced with the required minimum percentage of post-consumer and recovered material content.

MANUFACTURER CERTIFICATION

(To be submitted with invoice for each order)

TO BE COMPLETED BY MANUFACTURER:

NAME OF MANUFACTURER: _____

ADDRESS OF MANUFACTURER: _____

FEDERAL EMPLOYER I.D. NO.: _____

CONTRACT OR REQUISITION NO. _____

NAME OF CONTRACTOR: _____

ADDRESS OF CONTRACTOR: _____

Type of landscaping product(s) which the manufacturer furnished to the contractor: _____

CERTIFICATION: I, the undersigned officer of the above-named manufacturer, do hereby certify that I am authorized to provide this certification on behalf of the above-named manufacturer and that the type of construction product(s) listed above which my company furnished to the contractor named above for the referenced contract or purchase requisition, contained not less than ___% post-consumer materials and _____% recovered materials as those terms are defined in the invitation for bids. I understand that this document is subject to the provisions of the Unsworn Falsification of Authorities Act (18 Pa C.S. § 4904).

Signature

Name of Signatory

TITLE **DATE**

SECTION 56. CONSTRUCTION PRODUCTS RECYCLED CONTENT.

- A. **REQUIREMENT:** All construction products offered by the Contractor, or included in the final product offered by the Contractor and sold to the Commonwealth must contain the minimum percentage of postconsumer and recovered material content as shown in the chart below for the applicable products.
- B. **POST-CONSUMER MATERIAL:** Material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item. Post-consumer material is part of the broader category of recovered material.
- C. **RECOVERED MATERIAL:** Refers to waste materials and by-products which have been recovered or diverted from solid waste, but does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.
- D. **CONTRACTOR'S CERTIFICATION:** Contractor certifies that the construction product(s), which the Contractor is offering, contains the required minimum percentage of postconsumer and recovered material content as shown above for the product.
- E. **MANUFACTURER'S CERTIFICATION:** In addition to the Contractor's Certification, a Manufacturer's Certification must be completed and signed by the manufacturer before payment will be made to the Contractor for the delivered items. A Manufacturer's Certification form identical to the form shown below must be used. The Contractor is not required to submit the completed and signed Manufacturer Certification form with their proposal. The Commonwealth shall have no obligation to pay for the item(s) until a properly completed and signed manufacturer's certification is submitted for the delivered item.
- F. **ENFORCEMENT:** The Contractor may be required, after delivery of the construction product(s), to provide the Commonwealth with documentary evidence that the construction product(s) were in fact produced with the required minimum percentage of post-consumer and recovered material content.

Construction Products	MATERIAL	% of Post-Consumer Materials	% of Total Recovered Materials
Structural Fiberboard	Recovered Materials	-	80
Laminated Paperboard	Post-consumer Paper	100	-
Rock Wool Insulation	Slag	-	75
Fiberglass Insulation	Glass Cullet	-	20
Cellulose Insulation (loose-fill and spray-on)	Post-consumer Paper	75	-
Perlite Composite Board Insulation	Post-consumer Paper	23	-
Plastic Rigid Foam, Polyisocyanurate/ Polyurethane:	Recovered Material	-	9
Foam-in-Place Insulation	Recovered Material	-	5
Glass Fiber Reinforced Insulation	Recovered Material	-	6
Phenolic Rigid Foam Insulation	Recovered Material	-	5
Floor Tiles (heavy duty/commercial use)	Rubber	90	-
	Plastic	-	90

Patio Blocks	Rubber or Rubber Blends Plastic or Plastic Blends	90 -	- 90
---------------------	--	----------------	----------------

Polyester Carpet Fiber Face	Polyethylene terephthalate (PET) resin	25	-
Latex Paint: --Consolidated ¹ --Reprocessed ²	Recovered Material	100	-
----White, Off-White, Pastel Colors	Recovered Material	20	-
----Grey, Brown, Earthtones, and Other Dark Colors	Recovered Material	50	-
Shower and Restroom Dividers/Partitions:	Plastic	20	-
	Steel ⁴	16	9
		67	33
Carpet Cushion: --Bonded Polyurethane	Old Carpet Cushion	15	-
--Jute	Burlap	40	-
--Synthetic Fibers	Carpet Fabrication Scrap	-	100
--Rubber	Tire Rubber	60	-
Railroad Grade Crossing Surfaces	Coal Fly Ash	-	15
--Concrete	Tire Rubber	-	85
--Rubber ³	Steel	16	9
--Steel ⁴		67	33

- [Remainder of Page Intentionally Left Blank]

¹ Consolidated latex paint used for covering graffiti, where color and consistency of performance are not primary concerns.

² Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceiling, and trim; gutterboards; and concrete, stucco, masonry, wood, and metal surfaces.

³ The recommended recovered materials content for rubber railroad grade crossing surfaces are based on the weight of the raw materials, exclusive of any additives such as binders or additives

⁴ The recommended recovered materials content levels for steel in this table reflect the fact that the designated items can be made from steel manufactured from either a Basic Oxygen Furnace (BOF) or an Electric Arc Furnace (EAF). Steel from the BOF process contains 25-30% total recovered materials, of which 16% is post-consumer steel. Steel from the EAF process contains a total of 100% recovered steel, of which 67% is post-consumer.

MANUFACTURER CERTIFICATION

(To be submitted with invoice for each order)

TO BE COMPLETED BY MANUFACTURER:

NAME OF MANUFACTURER: _____

ADDRESS OF MANUFACTURER: _____

FEDERAL EMPLOYER I.D. NO.: _____

CONTRACT OR REQUISITION NO. _____

NAME OF CONTRACTOR: _____

ADDRESS OF CONTRACTOR: _____

Type of construction product(s) which the manufacturer furnished to the contractor: _____

CERTIFICATION: I, the undersigned officer of the above-named manufacturer, do hereby certify that I am authorized to provide this certification on behalf of the above-named manufacturer and that the type of construction product(s) listed above which my company furnished to the contractor named above for the referenced contract or purchase requisition, contained not less than ___% post-consumer materials and _____% recovered materials as those terms are defined in the invitation for bids. I understand that this document is subject to the provisions of the Unsworn Falsification of Authorities Act (18 Pa C.S. § 4904).

Signature

Name of Signatory

TITLE DATE

SECTION 57. STORAGE ENCLOSURE. The Contractor shall provide, at its cost, a suitable, substantial and watertight storage enclosure in which it shall store all materials that might be damaged by the weather. A Mobile trailer type is acceptable. The Contractor is responsible for maintaining and removing this enclosure at its cost. All storage enclosures shall be of sufficient size to hold all the Contractor's subject materials on the site at one time and shall have floors raised at least six (6) inches above the ground on heavy joists or sleepers. Storage enclosures shall have sufficient natural ventilation to preclude condensation.

SECTION 58. NO STORAGE IN EXISTING BUILDINGS. The Contractor shall not store any materials in any existing building or beyond the contract limits as defined by the drawings without prior authorization from the Department.

SECTION 59. OPERATION AND MAINTENANCE INSTRUCTION MANUALS. The Contractor shall, for its scope of work, carefully compile during the progress of the work indexed operation and maintenance manuals to include methods of care and cleaning of all types of visible surface materials, both interior and exterior, and descriptions of all systems and equipment, methods of operations and all warranties thereof. Descriptions shall give pertinent diagrams, identifying charts, color coding, connections, lubricating instructions, and single line and detailed wiring diagrams, using manufacturers' printed information where possible. Where manufacturers' printed information is not available, the Contractor shall obtain written instructions prepared by subcontractors and sub-subcontractors. The Contractor shall include names, addresses and phone numbers of all subcontractors and sub-subcontractors, and of service firms of each mechanical item, for the Client Agency's use after expiration of the guarantee period. At the time of Final Inspection, the Contractor shall submit a rough draft of the manual through the Submittal Process in e- Builder for approval by the Professional. After approval and before final payment, Contractor shall furnish the corrected and indexed Operation and Maintenance Instruction Manual in PDF electronic format to the Professional to be turned over to the Department for issuance to the Client Agency.

SECTION 60. RECORD DRAWINGS. At the time of Final Inspection, the Contractor shall use the Submittal Process to submit to the Professional a complete set of contract color prints in PDF format, corrected with suitable markings to show all changes or variations from the original contract, including all items uncovered during the work and showing the details of the work as actually built, including but not limited to horizontal and vertical dimensional references of all concealed pipe, conduit and other lines and equipment.

SECTION 61. IF LETTER OF INTENT ISSUED. If the Department elects to issue a Letter of Intent pursuant to §906 of the Commonwealth Procurement Code, the Letter will list and describe the Work that can commence prior to the Effective Date of Contract.

SECTION 62. COMMENCEMENT OF OFF-SITE WORK IF LETTER OF INTENT NOT ISSUED. If the Department does not issue a Letter of Intent, the date of commencement of Off-Site Work is the Effective Date of Contract.

SECTION 63. SUBMITTALS.

- A. A Submittal Register, which is a listing of the submittals needed for the Project, will be created by the Professional and uploaded for the Contractor's use. The Contractor will use this Submittal Register when creating their Submittal Schedule. The Professional's Submittal Register shall serve as the basis of the Prime Contractor's Submittal Schedule and is not by any means an all-inclusive list of submittals required for the project. The Contractors are responsible for reviewing all Contract Documents to fully develop an all-inclusive list of required submittals for the project and utilizing that list when creating the Submittal Schedule.**

- B. The Contractor shall review the Professional's Submittal Register and submit all necessary submittals, whether or not listed on the Submittal Register, through the Submittal Process to the Professional for review and approval. The Professional shall then forward all approved submittals to the Department and consultants with the Submittal Schedule**

- C. Submittals shall be in accordance with the Contract Documents and include, but not be limited to, such items as:**
 - 1. Contractor's, Subcontractor's, manufacturer's or fabricator's shop drawings.**
 - 2. Descriptive literature including, but not limited to:**
 - a. Catalog cuts**
 - b. Diagrams**
 - c. Operation charts or curves**
 - d. Test reports**
 - e. Samples**
 - f. Operations and maintenance manual, including parts lists**
 - g. Certifications**
 - h. Warranties**
 - i. Manufacturer**
 - 3. Coordination Drawings as required.**

- D. The Professional's approval of submittals does not relieve the Contractor of the responsibility for any deviation from the requirements of the Contract Documents, unless:**
 - 1. The Contractor has informed the Professional of such deviation in an attachment to their submittal at the time of submission; and**
 - 2. The Contractor has noted the deviation on the shop drawings; and**
 - 3. The Professional has given approval of the specific deviation. The Professional's approval also does not relieve the Contractor from responsibility for errors or omissions in the submittals.**

If each of these three steps is not performed, the Contractor will not be relieved of the responsibility for executing the Work in complete conformity with the Contract Documents, even though the submittals have been approved.

Failure to mention a deviation shall be construed as a non-conformance with the Contract Documents. The Contractor shall be responsible for all costs associated with bringing the Work back into conformance with the Contract Documents, including costs incurred by any other Prime Contractor, the Professional and the Department as a result of such non-conformance.

- E. The Contractor shall review, approve and submit all submittals required by the Contract Documents or required subsequently by the Department or the Professional in accordance with the Submittal Schedule in an orderly sequence so as to cause no delay in its Work or in the Work of any other Prime Contractor. Submittals shall be properly identified as specified in the Administrative Procedures and in such manner as the Department may require.
- F. By approving and submitting submittals, the Contractor represents that such submittals are sufficient for review purposes and that it has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data and that it has checked and coordinated each submittal with the requirements of the Work and of the Contract Documents. Where field measurements and field construction criteria are not verifiable at the date of the submittal, the Contractor shall ensure that dimensions will be held when constructed.
- G. Submittals will be reviewed and approved within fourteen (14) calendar days of the submission dates established by the Submittal Schedule, unless the Department and the Professional approve a different period of time. The fourteen calendar days span the time from upload of the submittal by the Contractor to the date the Professional transmits the return submittal. The Submittal Schedule shall take transmittal times into account when time periods are reviewed. Review and approval is only for conformance with the design concept of the Project and with the information given in the Contract Documents. Approval of a separate item does not indicate approval of an assembly in which the item functions. Approval of submittals shall be carried out on the Project in accordance with the Administrative Procedures. All submittals must be complete and meet the requirements of the entire specification. The Prime Contractor shall be responsible for all costs associated with delays of the Project incurred as a result of submittal incompleteness and/or disapprovals.
- H. The Contractor shall make any corrections required and shall resubmit submittals until approved. The resubmission shall be acted upon within ten (10) calendar days of its receipt, unless the Department and the Professional approve a different period of time. The ten (10) day period begins on the first full day after the Contractor uploads the resubmission and ends on the date the Professional sends the resubmission to the Contractor. Submittals uploaded earlier than the date established by the Submittal Schedule are not required to be returned until ten (10) days after the date established for the submittal by the Submittal Schedule.
- I. When resubmitting submittals, the Contractor shall direct specific attention to any revisions made, other than the corrections requested by the Professional on previous submissions, by noting such revisions on the resubmissions.

- A. **The Professional's approval of shop drawings or samples does not relieve the Contractor of responsibility for any deviation from the requirements of the Contract Documents, unless the Contractor has informed the Professional of such deviation at the time of submission, has noted the deviation on the submittals, and the Professional has given approval of the specific deviation. The Professional's approval also does not relieve the Contractor from responsibility for errors or omissions in the submittals. Failure to mention a variation shall be construed as a non-conformance with the Contract Documents. The Contractor shall be responsible for all costs associated with bringing the Work back into conformance with the Contract Documents, including costs incurred by any other Prime Contractor, the Professional and the Department as a result of such non-conformance.**
- B. **No portion of the Work requiring a submittal shall be commenced until the submittal has been approved. Any Work commenced by the Contractor prior to final approval of the submittal is performed by the Contractor at its own risk.**
- C. **Any exception taken to the content of another Contractor's approved submittal must be coordinated/resolved between the Contractors within three (3) calendar days of the Contractor's approved submittal. If the exception cannot be coordinated/resolved, it must be presented to the Professional through the RFI process within seven (7) calendar days of the Contractor's approved submittal.**

SECTION 64. SUBMITTAL SCHEDULE.

- D. **Each Contractor shall, within seven (7) days of the Effective Date of the Contract review the Professional's Submittal and prepare and submit a Submittal Schedule with all necessary submittals, whether or not listed on the Submittal Register, to the Lead Contractor, organized by related specification section number sequences, showing all items requiring submission . The Submittal Schedule shall be submitted as prescribed by the Administrative Procedures.**
- E. **The Contractor's initial Submittal Schedule shall include the following, at a minimum:**
 - 1. **Submittal breakdown by Specification Section number and division; and**
 - 2. **Scheduled date for initial submittal of item; and**
 - 3. **Days required after return of an approved submittal to order, fabricate and deliver the specific item to the site.**
- F. **The Submittal Schedule shall be integrated and tied to the logic of activities in the Project Schedule by the Lead Contractor to ensure adequate review time is included in the activity durations for all items on the Submittal Schedule.**
- G. **Each Contractor shall comply with the Submittal Schedule and submit items within the order and dates established therein. Each Contractor shall not be permitted to stack the submittals in a manner that would inundate the Professional in such a manner that the submittals cannot be reviewed and decided upon in a timely manner.**
- H. **Submittals relating to materials and equipment that require advanced approval shall be scheduled and submitted before the Contractor issues a purchase order or otherwise acquires the materials or equipment.**

- I. Drawings of component items forming a system or that are interrelated shall be organized and submitted concurrently. Certifications to be submitted with the drawings shall be so scheduled. The Submittal Schedule shall be coordinated with the Schedule of Values to ensure delivery and payment requests are projected accurately.
- J. Neither the Department, its designee, nor the Professional will be responsible for the failure of the Contractor to properly schedule the process of material/product design, submittal, review, fabrication, delivery and storage/installation.
- K. The Department may require the Contractor to add and/or delete items on the Submittal Schedule at any time.
- L. The approved Submittal Schedule will become a part of the Contract and the Contractors must comply with it. The Contractor shall provide to the Lead Contractor sufficient information to permit the Lead Contractor to revise and/or update the Submittal Schedule monthly to take into account all changes and coordinate this Submittal Schedule with the Project Schedule. Each such revised edition and/or revision to the Submittal Schedule shall be resubmitted to the Department for approval. This Submittal Schedule shall be coordinated with related submittals of all Prime Contractors.

SECTION 65. COORDINATION AND SEQUENCING OF SUBMITTALS.

- M. The Contractor shall coordinate preparation and processing of submittals with the performance of the Work and the Project Schedule so the Work will not be delayed by the submittal process.
- N. The Contractor shall coordinate and sequence different categories of submittals for the same Work and for interfacing units of Work, so that one will not be delayed by the coordination of the Professional's review with another.
- O. No delay damages or time extensions will be granted for time lost due to late, inadequate or uncoordinated submittals or for the time required to resubmit late, inadequate or uncoordinated submittals.
- P. The Contractor shall be responsible to determine items that will require long lead time to procure. Adequate time shall be allowed for long lead items that require submittals to be made early during the course of the Work in the Submittal Schedule and Project Schedule.
- Q. No delay damages or time extensions will be granted for lack of consideration being given to long lead items.

SECTION 66. COORDINATION DRAWINGS.

- R. All Contractors are required to participate in the creation and updating of one complete composite set of Coordination Drawings to pre-plan the installation of General, HVAC, Electrical, Fire Protection, Plumbing and other Work as required.
- S. The Department may consider the completion of Coordination Drawings for each Contract as a condition of approval for any Invoice involving any material or equipment delivered or for any Work by these Contractors.

- T. The purpose of these Coordination Drawings is to identify coordination problems and interferences prior to installation. The Contractors shall prepare and submit Coordination Drawings for any Work where close coordination is required for installation of products and materials fabricated off-site by separate Contractors, and where limited space availability necessitates maximum utilization of space for efficient installation of different components. Coordination Drawings are required for all equipment rooms, floors, spaces and other areas in which the Work of two or more trades or Contractors is to be installed and in which the potential for conflict or interference exists, or as determined by the Department.
- U. The HVAC Contractor will be the Lead Contractor for purposes of the Coordination Drawings and shall facilitate the Coordination Drawing Process between Prime Contractors.
- V. The HVAC Contractor will prepare background drawings that will be distributed to all of the other Contractors for them to mark-up and return to the HVAC Contractor.
- W. The Coordination Drawings shall:
 1. Show the Work of all Contractors impacted; and
 2. Be drawn to a scale not smaller than 1/4" = 1'-0" (30" x 42" sheet size); and
 3. Show clearly in both plan and elevation that all Work can be installed without interference; and
 4. Show the interrelationship of equipment and systems to indicate coordination among trades; and
 5. Indicate required installation sequences; and
 6. Be based on submitted shop drawings and Contract Documents, and include equipment foundations, all equipment, piping, conduit, ductwork, panels, control centers and related appurtenances.
- X. The Department may assist, if requested, in the resolution of conflicts or disputes with locations of Work items found by the Contractors during the preparation of the Coordination Drawings.
- Y. The HVAC Contractor will incorporate items indicated on the marked-up drawings onto the background drawings and upload these final Coordination Drawings to e- Builder for other Contractors use. One paper set and one PDF electronic format, in its native software of the Coordination Drawings are to be provided to the Department.
- Z. Since the preparation of Coordination Drawings acceptable to the Department is a contract requirement, the cost is to be included in each Contractor's bid.

Any Work installed prior to approval of Coordination Drawings shall be at the Contractor's risk. Subsequent relocation required to avoid interferences shall be made without additional expense or time extensions to the Department.

SECTION 67. STANDARDS OF QUALITY. Where trade names, catalog number and manufacturers of material or equipment are specified, they are mentioned for the purpose of establishing a standard of quality, performance, and appearance, and for establishing a standard for competitive bidding. If the Contractor wishes to utilize material or equipment that they believe is of the same type, but manufactured by others than those named in the specifications, the Contractor shall certify that the material or the equipment is equal in quality, performance and appearance to that mentioned in the specifications. The Contractor shall submit to the Professional and the Department, subsequent to the Award of Contract, a request to install such material or equipment. The Contractor's request shall include a comprehensive description of the material or equipment proposed to be utilized as an equal, including engineering, construction, and dimension and performance data. Within thirty (30) days after receipt of the Contractor's request, the Professional will render a determination to the Contractor, which is final. If the Contractor refuses or fails to proceed in accordance with the Professional's determination, the Department may issue cure or non-conformance notices and/or declare the Contractor in default.

SECTION 68. SUBSTITUTION OF MATERIALS. If the Contractor desires to furnish materials or equipment other than that which is specified, the Contractor shall submit to the Professional a comprehensive description of the material or equipment proposed for substitution, including engineering, construction, dimension, performance and appearance data, along with a statement of the cost involved. The Professional, with the approval of the Department, shall render a determination to the Contractor. If the substituted material or equipment is approved, the Contractor is responsible for any and all costs incurred to implement the substitution and for eliminating any additional time that may be needed as a result of implementing the substitution. If the cost of the substituted item is less than the specified item, the Department is entitled to a credit for the difference between the cost of the substituted item and the item specified.

SECTION 69. SAFETY PRECAUTIONS AND PROGRAMS. The Contractor shall recognize that it is important to business to prevent the occurrence of incidents that lead to occupational injuries or illnesses. The Contractor is responsible for initiating, maintaining and supervising all safety precautions and programs required under its portion of the Work.

SECTION 70. SAFETY OVERVIEW. The Contractor and its subcontractors of all tiers will be responsible for the safety and security of its employees under their control and as to its area of Work.

AA. The Contractor and its Subcontractor(s) of any tier shall be required to have its company Safety Program in place and implemented throughout the duration of the project.

BB. The Contractor will have a Site Safety Program, maintain injury records as required by OSHA. Upon request by the Department, the Contractor shall make available the Site Safety Program, information on injury logs, safety meetings and their topics, inspection reports and other items concerning Project safety.

CC. The Contractor will inform the Department of any Federal or State inspection, and the Department will receive copies of all Federal and State inspection reports, citations, penalties, abatement dates, etc.

DD. All Contractors will give full cooperation to all authorized Inspectors, who may periodically inspect the Project without notice.

SECTION 71. SAFETY OF PERSONS AND PROPERTY. The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury, or loss to:

- EE. All employees involved in the Work and all other persons who may be affected thereby; and
- FF. All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of its subcontractors of any tier; and
- GG. Other property within the Contract Limits or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and
- HH. All areas of the Project site where unauthorized entry or presence would present a potential hazard to the health and safety of trespassers shall be adequately posted to prevent access by unauthorized personnel.

SECTION 72. COMPLIANCE WITH SAFETY LAWS. The Contractor shall comply at all times with all applicable Federal, Commonwealth, and local laws, ordinances, rules, regulations and orders of any public authority having jurisdiction for the safety of persons or property and to protect them from damage, injury or loss. The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities until the acceptance of all on-site physical work, change order work, and/or demobilization. All areas of the Project shall be hardhat areas. All persons within the Contract Limits are required to be protected by protective helmets in compliance with Occupational Safety & Health Administration (OSHA) requirements.

SECTION 73. EMPLOYEE SAFETY ORIENTATION AND SAFETY MEETINGS.

- II. Each Contractor and its Subcontractor(s) of any tier shall follow OSHA requirements regarding the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment.
- JJ. The Contractor and each Subcontractor shall also provide a company-specific basic site and safety orientation to each individual before they begin Work on the Project. This orientation shall cover general safety rules, potential hazards, site work rules, wearing of protective equipment, etc. The Contractor and each Subcontractor shall keep a record of all attendees and topics discussed.
- KK. The Contractor and each of its subcontractors shall hold weekly Toolbox Talks Meetings at the Project site.

SECTION 74. FIRST AID TREATMENT.

- LL. The Contractor shall keep on site a first aid kit supplied according to current regulations and shall have a certified person trained in first aid and CPR to cover those periods outside of normal project working hours.

SECTION 75. EMPLOYEE AND VISITOR DRESS REQUIREMENTS.

- A. This Project shall be a hardhat Project and, all supervisors, employees and visitors shall be required to wear a suitable hardhat while on the Project site.
- B. Other appropriate personal protective equipment shall be provided and worn as required for personal safety and protection.

SECTION 76. EMERGENCY NOTIFICATION. A procedure will be established by each Contractor to provide emergency communications to all individuals on the site. This procedure will not be used to handle routine calls to individuals.

SECTION 77. COMPLIANCE WITH SAFETY REGULATIONS.

- C. The Contractor's failure to comply with the safety requirements will be considered as non-compliance with the Contract and may result in remedial action as provided by the Contract.
- D. Even though the Department has no duty regarding the Contractor's compliance with safety regulations, if the Department notifies any Contractor of any safety issue, the Contractor shall make all reasonable efforts to correct the condition or act.

If a Contractor or Subcontractor refuses to correct the safety issue, condition or act, the Department, in its sole discretion, may take any other action it deems appropriate.

All costs incurred due to correcting the Contractor's safety issue, condition, or act shall be borne by the Contractor which created the safety issue, condition or act and costs will be back-charged to this Contractor.

- E. Each Contractor shall be responsible for payment of all fines and/or claims for damages levied for deficiencies relating to conduct of Contractor's Work.

SECTION 78. EXPLOSIVES. Unless permitted in the specifications, the use of explosives and other hazardous materials or equipment is not permitted for the execution of the Work. If explosives are permitted, the Contractor shall observe the utmost care, performing such Work with experienced personnel and in accordance with all Federal, Commonwealth, local, Departmental, and institutional regulations, so as not to endanger life or property. Rock encountered within five (5) feet of pipelines or buildings shall be removed without blasting. All explosives shall be stored in a secure and safe manner, in strict conformity with all Federal, Commonwealth and municipal regulations and all such storage shall be clearly marked "Dangerous-Explosives" and shall be in the care of competent watchmen at all times. The Contractor shall provide insurance in accordance with the special insurance provision relating to "Blasting". The Contractor shall be responsible for all damages caused by the use of explosives, hazardous materials and/or equipment, and blasting and shall notify the Department of any claims of damage associated with this Paragraph at the time of claim.

SECTION 79. REMEDIATION OF DAMAGES. The Contractor shall remedy all damages or loss to any property caused in whole or in part by the Contractor, any Subcontractor, any sub- subcontractor, or anyone directly or indirectly employed by any of them. If damage or loss is attributable to faulty drawings or specifications or to the acts or omissions of the

Department or Professional, and the damage or loss is not attributable to any fault or negligence of the Contractor, then the Contractor shall not provide remediation.

SECTION 80. LOADS. The Contractor shall not load or permit any part of the Work to be loaded so as to endanger the safety of persons or property.

SECTION 81. WORKPLACE DRUG AND ALCOHOL POLICY. The Department is committed to providing a safe workplace for the workers assigned to the Project, promoting high standards of employee health and fostering productivity. Contractor shall establish a drug and alcohol policy for the project with the goal of maintaining a work environment that is free from the effects of the use of illegal drugs and alcohol. Anyone employed at the Project site will comply with the contractor's drug and alcohol policy. The Department reserves the right to amend this procedure upon notice to the Prime Contractor.

1. COMPLIANCE PROCEDURE: The Department reserves the right to audit any drug and alcohol policy program required by this specification to verify compliance results within twenty-four (24) hours of the Department's notification of intent to audit. The Department shall have free right of access to all relevant records of the Prime Contractor and their subcontractors for this purpose, provided such record disclosures are within the scope of the Commonwealth of Pennsylvania's Department of Health and Human Services guidelines pertaining to confidentiality of employee records. The Contractor's pre-engagement employees who receive a positive test result shall immediately leave the project site. Transportation of employees receiving a positive test result is the direct responsibility of the employing Prime Contractor. Furthermore, pre-engagement employees receiving a positive test result shall not be permitted to return to the project site earlier than ninety (90) days from the date of the positive test. At that time, the employee must be tested again.

SECTION 82. COST OF DAMAGE TO OTHER CONTRACTORS' WORK. The Contractor shall bear the cost of replacing all Work of any other Prime Contractor that is destroyed or damaged by the removal and/or correction of the Contractor's defective or non-conforming Work.

SECTION 83. FAILURE TO CORRECT DEFECTIVE OR NON-CONFORMING WORK. If the Contractor does not remove such defective or nonconforming Work within the time set forth by the Department, the Department may have the defective or nonconforming Work removed, implement any corrective work by any means necessary, and issue a credit change order to the offending Contractor for all costs associated with the correction. Failure to correct defective or non-conforming work as directed by the Department may be cause for default and/or breach of contract.

SECTION 84. INVESTIGATION BY THE DEPARTMENT. The Department reserves the right, upon investigation of installation of defective and/or nonconforming Work, to note this situation in the Contractor Responsibility Program and may consider suspension of the Contractor in accordance with Section 531 of the Commonwealth Procurement Code. The Department may also, in its sole discretion, find the Prime Contractor in breach of its Contract and/or declare the Contractor in default of its Contract in accordance with the standard terms and conditions.

SECTION 85. ACCEPTANCE OF NONCONFORMING WORK. If the Department knowingly elects to accept nonconforming work, it may do so instead of requiring its removal and correction. If nonconforming work is accepted, a credit Change Order shall be issued to reflect an appropriate reduction in the Contract Sum, or, if the amount is determined after final payment, it shall be

paid by the Contractor and/or the Contractor's surety.

SECTION 86. DEPARTMENT'S RIGHT TO CARRY OUT THE WORK. If the Contractor fails to carry out the Work in accordance with the Contract Documents or fails to perform any provision of the Contract, the Department may, after three (3) days notice to the Contractor and without prejudice to any other remedy, carry out the Work in accordance with the Contract Documents, or correct such failures, defects, or non-conforming work. In such case, an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of carrying out the Work or correcting such failures, including the cost of the Department's designee and the Professional's additional services made necessary by such failure. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor and/or the Contractor's Surety shall pay the difference to the Department.

- A. **OBLIGATIONS OF CONTRACTOR NOT LIMITED BY THIS ARTICLE.** The obligations of the Contractor under this Article are in addition to, and not in limitation of, any obligations imposed upon the Contractor by the Contract Documents or otherwise prescribed by Law. Unsettled claims;
- B. Faulty, nonconforming or defective work or material;
- C. Failure of the work or material to comply with the requirements of the Contract Documents; or
- D. Terms of any special warranties and/or special guarantees required by the Contract Documents.

SECTION 87. PROJECT SIGN. On or before the date of the first regularly scheduled Job Conference (after the Initial Job Conference), the Lead Contractor shall erect, at a prominent location (selected by the Department) a six-foot high by eight-foot wide (6'X 8') sign, well braced, and supported by 4"X 4" posts, identifying the Project under construction. The sign board may be constructed from weatherproof plywood, hardboard, or other smooth face material that will weather and remain intact throughout the Project. A three-inch (3") wood border shall frame the sign. The sign shall be placed with the eight-foot (8') dimension horizontal. The base color of the sign shall be white weatherproof flat paint with red border. Lettering shall be in fast blue block letters and shall conform to the following:

COMMONWEALTH OF PENNSYLVANIA (4" LETTERS MIN.)
THE DEPARTMENT OF GENERAL SERVICES (4" LETTERS
MIN.)

[name], GOVERNOR (3" LETTERS MIN.)
[name], SECRETARY, DEPT. OF GENERAL SERVICES (3" LETTERS MIN.)
[name], SECRETARY, DEPT. OF (CLIENT AGENCY) (3" LETTERS MIN.)

PROJECT NO. D.G.S. [number] (3" LETTERS MIN.)
[building name] (4" LETTERS
MIN.) [facility name] (3"
LETTERS MIN.)

[name]...PROFESSIONAL (3" LETTERS

MIN.) [name]....GENERAL CONTRACTOR (3" LETTERS

MIN.) [name]....HEATING CONTRACTOR (3" LETTERS MIN.)

[name].. PLUMBING CONTRACTOR (3" LETTERS MIN.)

[name]... ELECTRICAL CONTRACTOR (3" LETTERS MIN.)

NOTE: For information shown in brackets Contractor shall check with the Regional Director's office for proper data.

Upon Completion of the work, or when directed by the Department, the Lead Contractor shall remove the sign.

The Contractor shall change the names provided on the sign should the individual names change during the course of the project. This shall be done at no additional cost to the Department.

SECTION 88. FOUNDATIONS FOR MECHANICAL EQUIPMENT. The HVAC, Plumbing and Electrical Contractors shall furnish and install foundations and supports for all equipment installed under their respective Contracts. Foundations and supports shall include isolation mounting for noisy and vibrating equipment. Each Contractor shall provide sufficient dowels or anchors in bases as required for equipment supplied under its Contract. Such foundations and supports shall not be those concrete slabs or that integral concrete construction noted and dimensioned on the architectural and structural drawings, which are considered the responsibility of the Contractor for General Construction.

SECTION 89. SANITARY FACILITIES. The Lead Contractor shall, at its cost, provide and maintain in a clean and sanitary condition, adequate and approved sanitary facilities in accordance with O.S.H.A. requirements. All facilities shall be screened against insects. When directed by the Department, the Contractor shall dismantle and remove these facilities and disinfect as required. Portable chemical toilets approved by the Pennsylvania Department of Health are acceptable. Under temporary field conditions, provisions shall be made to assure not less than one toilet facility is available.

SECTION 90. SANITARY FACILITIES AFTER LINES INSTALLED. As soon as soil lines and water lines have been installed inside the building and tested successfully by the Plumbing Contractor, the Plumbing Contractor shall, at its cost, install two (2) lavatories and sufficient number of toilets according to the following table:

NUMBER OF WORKERS	MINIMUM NUMBER OF FACILITIES
20 or Less Workers	1
21 or More Workers	1 toilet seat and 1 urinal per 40
200 or More Workers	1 toilet seat and 1 urinal per 50

These shall be kept in working order by the Plumbing Contractor and in a clean and sanitary condition by the Lead Contractor. All supplies for these facilities shall be provided and restocked by the Lead Contractor.

SECTION 91. HOISTING FACILITIES. The Contractor for General Construction shall erect, maintain and operate at its cost, hoisting facilities. In the event the hoisting facilities provided by the General Contractor are not available or are unable to accommodate the needs of other Prime Contractors, each Prime Contractor must provide hoisting facilities for its own work. All hoisting facilities must comply with the safety regulations of the Department of Labor and Industry.

SECTION 92. TEMPORARY VENTILATION. The Contractor shall provide temporary ventilation to remove from the structure any excessive heat and/or humidity in enclosed portions of the Work, resulting from its construction operations so that the Work may be carried on without interruption and under correct conditions, including required dryness for installation of the various materials. Removing any dangerous or noxious fumes or particles suspended in the air is the responsibility of the Contractor whose construction operations caused these conditions to exist. Temporary equipment used for this temporary ventilation shall produce no hazard to the Work or to any person in or near it. The Contractor shall furnish all such temporary equipment; pay all costs for it and for its operation, including fuel and power supplies during operation both in and out of normal working hours. The Contractor shall remove the equipment when it is no longer required, or when so directed by the Department.

SECTION 93. WORK BEYOND LIMIT OF CONTRACT. For purposes of performing the Work, the site is defined by the Limit of Contract lines shown on the drawings. The Contractor is responsible for any work performed beyond the limit of Contract.

SECTION 94. ADVERTISING. No advertising is permitted within the Work area or adjacent area. This does not apply to corporate vehicles or attire.

SECTION 95. STORAGE AND STOCKPILING ON ROOFS. No materials of any type may be stored or stockpiled overnight on roofs.

SECTION 96. AUDIT OF RECORDS. The Department may, at reasonable times and places, audit the books and records of the Contractor. The Contractor shall maintain books and records related to the Contract for a period of three (3) years from the date of final payment. The Contractor shall include a requirement in contracts with subcontractors or suppliers that requires the Subcontractor or Supplier to maintain its records for the same length of time.

SECTION 97. TEMPORARY TRAFFIC CONTROL. The Project site may have active pedestrian, bike or automobile traffic adjacent to site for the entire duration of the Project. If applicable, the Contractors shall incorporate, furnish and implement the following work as part of this Project.

A. **TRAFFIC CONTROL – TEMPORARY TRAFFIC CONTROL GUIDELINES (PENNDOT PUBLICATION**

213): The needs and control of all road users (motorists, bicyclists, and pedestrians within the highway, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130 and Temporary Traffic Control Guidelines (PennDOT Publication 213) through a Temporary Traffic Control (TTC) zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents.

Publication 213 applies to Contractors; utilities; Federal, State, County, township and municipal governments; and others performing applicable construction, maintenance, emergency or utility/permit work on highways or so closely adjacent to a highway that workers, equipment or materials encroach on the highway or interfere with the normal movement of traffic.

SECTION 98. REDUCTION OF NOISE. The Contractor must take reasonable steps to minimize noise and shall perform work in accordance with local noise ordinances. The Contractor shall perform noise-producing work in less sensitive hours of the day or week as directed by the Department. The Contractor shall maintain noise-producing work at or below the decibel levels and within the time periods specified and shall perform construction activities involving repetitive, high-level impact noise only between 8:00 a.m. and 6:00 p.m. unless otherwise permitted by the Department and permissible by local ordinance.

SECTION 99. VISIBLE DUST EMISSIONS. No person shall perform any construction, demolition, excavation, extraction, or other earthmoving activities unless appropriate measures are sufficiently implemented to limit Visible Dust Emissions (VDE) to 20% opacity and comply with the conditions for a stabilized surface area when applicable. The Contractor shall apply sufficient water to building exterior surfaces, and/or unpaved surface areas where equipment will operate to limit VDE to 20% opacity throughout the duration of razing and demolition activities or handling, storage, and transport of bulk materials on-site or off- site. The Contractor shall apply sufficient dust suppressants to unpaved surface areas within 100 feet where materials from razing or demolition activities will fall in order to limit VDE to 20% opacity. The Contractor shall also apply sufficient dust suppressants to unpaved surface areas where wrecking or hauling equipment will be operated in order to limit VDE to 20% opacity.

PROJECT MANUAL

DMVA PROJECT NO.: 42150101

For

PRE-ENGINEERED STEEL STORAGE BUILDING

**SCRANTON / TAYLOR FMS
LACKAWANNA COUNTY – TAYLOR – PENNSYLVANIA - 18517**

Tom Wolf, GOVERNOR

Date: 4 APRIL, 2017

**DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
Office of Facilities and Engineering
Bureau of Military Construction and Engineering
Bldg. 0-10, Chapel Road, Ft. Indiantown Gap
Annville, Lebanon County, PA 17003
Phone: (717) 861-2345 FAX: (717) 861-8583**

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE NO.</u>	
<u>DIVISION 01</u>			
<u>GENERAL REQUIREMENTS</u>			
Section 010100	Summary of Work	010100-1	010100-3
Section 010400	Coordination and Control	010400-1	010400-6
Section 013300	Submittals Procedures	013000-1	013000-3
	Form 66 – General		
	Form 66 – Electrical		
Section 014000	Quality Control Testing Services	014000-1	014000-5
Section 015000	Temporary Utilities	015000-1	015000-2
Section 017700	Closeout Procedures	017700-1	017700-5
Section 017823	Operation and Maintenance Data	017823-1	017823-8
Section 017839	Record Documents	017839-1	017839-4
GENERAL CONSTRUCTION (.1)			
<u>DIVISION 03</u>			
<u>CONCRETE</u>			
Section 033000	Cast-in-place Concrete	033000-1	033000-18
<u>DIVISION 04</u>			
<u>UNIT MASONRY</u>			
Section 042000	Cast-in-place Concrete	042000-1	042000-15
<u>DIVISION 05</u>			
<u>METALS</u>			
Section 055000	Metal Fabrications	055000-1	055000-3
<u>DIVISION 07</u>			
<u>THERMAL AND MOISTURE PROTECTION</u>			
Section 079200	Joint Sealants	079200-1	079200-8
<u>DIVISION 08</u>			
<u>OPENINGS</u>			
Section 081113	Hollow Metal Doors and Frames	081113-1	081113-11
Section 083323	OH Coiling Doors	083323-1	083323-6
Section 087111	Door Hardware	087111-1	087111-16
<u>DIVISION 09</u>			
<u>FINISHES</u>			
Section 099113	Exterior Painting	099113-1	099113-4
<u>DIVISION 10</u>			
<u>SPECIALTIES</u>			
Section 104416	Fire Extinguishers	104416-1	104416-3
<u>DIVISION 13</u>			
<u>SPECIAL CONSTRUCTION</u>			
Section 133419	Metal Building System	133419-1	133419-16
<u>DIVISION 32</u>			
<u>EXTERIOR IMPROVMENTS</u>			
Section 312000	Earth Moving	312000-1	312000-10

ELECTRICAL CONSTRUCTION (.4)

DIVISION 26

ELECTRICAL

Section 260500	Common Work Results for Electrical	260500-1	260500-29
Section 260519	Low-Voltage Electrical Power Conductors & Cables	260519-1	260519-4
Section 260526	Grounding & Bonding for Electrical Systems	260526-1	260526-4
Section 260529	Hangers & Supports for Electrical Systems	260529-1	260529-4
Section 260533	Raceway & Boxes for Electrical Systems	260533-1	260533-5
Section 260553	Identification for Electrical Systems	260553-1	260553-5
Section 262416	Panelboards	262416-1	262416-5
Section 262726	Wiring Devices	262726-1	262726-4
Section 262816	Enclosed Controllers and Circuit Breakers	262816-1	262816-3
Section 265119	LED Interior Lighting	265119-1	265119-5

SECTION 010100 – SUMMARY OF WORK

PART 1 – GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SCOPE OF WORK, GENERAL

- A. The work under this Contract shall generally consist of, but not necessarily limited to, providing all labor, material, devices, tools and equipment required for the construction of an 3696 sf (approx.) Pre-engineered steel storage building, located at Scranton / Taylor FMS, Lackawanna County, Pennsylvania and shall be in total accordance with the specifications and drawings and subject to the terms and conditions of all other Contract Documents.

1.3 PERFORMANCE PERIOD

- A. ***Three Hundred*** (300) calendar days from Government granted Notice to Proceed.

1.4 WAGE SCALES

- A. Wage Scales ARE REQUIRED to be paid on this Project.

1.5 QUESTIONS DURING BID PROCESS

- A. Direct all questions pertaining to the project as shown and described in the contract documents to both persons listed below.

Ms. Tina Rebuck, Administrative Officer
Dept. Of Military and Veterans Affairs
Bldg. 0-47, Fort Indiantown Gap
Annaville, PA 17003
Email: trebuck@pa.gov
Ph.: 717.861.8794 Fax: 717.861.2932

Mr. Raymond Fishburn, Architectural Supervisor
DMVA, Bureau of Military Construction & Engineering
Bldg. 0-10, Fort Indiantown Gap
Annaville, PA 17003
Email: rafishburn@pa.gov
Ph.: 717.861.8221 Fax: 717.861.8683

1.6 SUBMITTALS

- A. See individual Sections and “SCHEDULE OF MATERIAL SUBMITTALS (AF FORM 66)” included within the project Design Documents.
- B. Submittals shall be forwarded to Department of Military & Veteran’s Affairs; **Division of Engineering and Architecture, Building 0-10, Fort Indiantown Gap, Annville, Pa 17003.**
- C. Each submittal shall include the following:
 - 1. Project number
 - 2. Contract number
 - 3. Related specification section
 - 4. Contractor’s approval stamp
 - 5. Contractors initials and date
 - 6. Area for DMVA-BMCE review stamp
- D. All submittals must be approved by the discipline responsible, DMVA-BMCE **Design Professional** prior to incorporation into the project.

1.7 REQUIRED WARRANTIES

- A. Contractor shall provide all required warranties as outlined within the Project Design Specifications and on all included Government AF Form 66’s.

PART 2 – OUTLINE OF REQUIRED WORK

- 2.1 The work of this project consists of but is not necessarily limited to the following. Detailed requirements of the work are described on the pertinent specification sections and/or shown on the drawings.
 - A. (GENERAL – POINT 1)
 - 1. Prepare and submit all necessary pre-construction documentation as outlined within the project Design Documents.
 - 2. Perform the following tasks as outlined/required within the Project Design Documents:
 - a. Perform selective demolition of the existing racking system.
 - b. Prepare existing concrete slab for new footer & pier construction
 - c. Construct all new framing (columns, beams, walls & roof).
 - d. Install insulation, doors and framing.
 - 3. Complete Punch Lists and Final Cleaning.
 - 4. Provide all required closeout documentation and training per the Project Design Documents prior to deeming/granting the project complete.

- B. (ELECTRICAL – POINT 4)
1. Prepare and submit all necessary pre-construction documentation as outlined within the Project Design Documents.
 2. Perform the following tasks as outlined/required within the Project Design Documents:
 - a. Install power distribution disconnects, transformer and panel boards.
 - b. Install new conduit and wiring for lighting.
 - c. Install new conduit and wiring for receptacles, data outlets and fire alarm.
 - d. Install lighting fixtures and lighting controls.
 - e. Install receptacles and security devices.
 - f. Test all systems and adjust as required.
 3. Complete Punch Lists and Final Cleaning.
 4. Provide all required closeout documentation and training per the Project Design Documents prior to deeming/granting the project complete.

END OF SECTION 010100

SECTION 010400 - COORDINATION AND CONTROL

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, and “Special Conditions”, and “Division 1 - General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This section includes the on-site provisions that govern the performance of the work to complete this project.

1.3 CONTRACTS – FOR THIS PROJECT CONSTRUCTION

- A. General Construction (Lead Contractor)
- B. Electrical Construction

1.4 COORDINATION

- A. The General Contractor shall be responsible for coordination between all contracts.
 - 1. Construction operations shall be coordinated to ensure efficient and orderly installation of each part of the work.
 - 2. Coordinate installation of different components with other Contractors to ensure accessibility for required construction operations.
 - 3. Make necessary provisions to accommodate items scheduled for later installation.

1.5 VISIT TO SITE

- A. For access to the site during the bidding period contact the Using Agency site personnel with phone number listed below:
 - 1. Using Agency Site Representative: **TOM DITCHEY**
 - 2. Telephone Number: **717.821.7759**

1.6 UNIDENTIFIED HAZARDOUS MATERIALS (ASBESTOS, CHEMICALS, ETC.)

- A. There is a possibility that hazardous materials not identified in the contract documents may be discovered on this project. Should it be determined that some or all of the hazardous materials must be removed, the Contractor shall obtain an estimate for said removal from a Subcontractor who is experienced in the field, has insurance and is knowledgeable of the regulations as they apply. The Contractor may provide the estimate itself if it is qualified in the applicable hazardous materials field. The Department shall consider authorizing a Change Order for the removal of the hazardous material to the extent necessary.

- B. The Contractor or Subcontractor must comply with all requirements of the General Conditions, including the maintenance of insurance up to the limit required under the General Conditions.
- C. Should a hazardous material be encountered on the job, the Contractor shall comply with all statutes and regulations of the Commonwealth of Pennsylvania and all rules and regulations of the United States Environmental Protection Agency as they apply during construction and demolition work and the disposal of hazardous material. Particular attention is drawn to Code of Federal Regulations, Title 40, Part 61, Section 112 of Clean Air Act and PA Department of Labor and Industry, Act 194 for asbestos.
- D. The Contractor shall comply fully with the regulations of OSHA as they pertain to the protection of workers exposed to the emission of asbestos fibers, chemicals, etc. and shall take all steps necessary to protect its employees, as well as all other people engaged in the building.
- E. Whenever a hazardous material is to be removed or disposed of, the Contractor is required to make proper notification to the Bureau of Air Quality Control in the Department of Environmental Protections' Regional Office, PA Department of Labor and Industry and EPA as applicable and is required to obtain and pay for any permits required. Disposal shall conform to all applicable regulations; and documentation shall be required, when applicable.

1.6 LEAD PAINT

- A. The Contractor shall perform the work with the assumption that all painted surfaces are lead-containing. Each Prime Contractor is responsible for following all required OSHA 1926.62 'Lead In Construction' standards when disturbing or impacting these painted surfaces during the course of the renovations, including but not limited to activities such as: cutting and patching, core drilling, penetration, anchoring, fastening, etc. The area(s) shall be visually clean upon completion of any of these activities.
 - 1. Action Plan: Contractor(s) shall submit an Action Plan (that conforms to Paragraphs 1.6 A, A.1., A.2., and A.3.) to the Department at the Initial Job Conference, which specifically outlines details of means and methods to be used for each dust-generating activity involving lead-painted surfaces. Include erection of critical barriers and plastic sheeting for dust control, subsequent exposure assessment, personal protective equipment, hygiene and clean-up for demolition, and selective demolition (large area disturbances).
 - 2. Contractor(s) shall utilize means and methods that preclude uncontained dust generation to complete work that disturbs/impacts lead-containing paint (i.e., waxpaper cup filled with shaving cream, paint stripper, HEPA-assisted drills, etc.) for minor area disturbances.
 - 3. Contractor(s) shall ensure areas beyond work area are not contaminated and shall immediately stop work and erect plastic sheeting to prevent the spread of dust, anytime means and methods inadvertently create dust.

1.7 MOLD

- A. In the event mold is encountered, the Contractor shall implement corrective actions to protect workers, other building occupants, and to prevent the disturbance of mold in affected areas.

Although not presently regulated by EPA and/or OSHA, the EPA does provide industry standards regarding worker safety and abatement procedures, which are the minimum procedures to be followed if mold is encountered.

- B. Any mold that appears as a result of construction shall be abated immediately by the Contractor responsible for this condition. The affected surface shall be cleaned, removed, and replaced. Inspection and testing shall be done by a qualified testing agency to confirm the mold has been removed in its entirety.

1.8 TESTING OF EQUIPMENT

- A. After any equipment furnished under the contract and any permanent heating, ventilating, plumbing, drainage or electrical systems and equipment have been installed or modified, it shall be the responsibility of the Contractor to operate its equipment for a satisfactory period of time, as required by the Department for proper testing and instructing the operating personnel. Fuel, electricity and water required for proper testing of permanent equipment and for the period of instructing personnel, shall be paid for by the Contractor testing its equipment.

1.9 INSTRUCTIONS AND TRAINING

- A. Refer to General Conditions, as specified in the applicable technical portion of each specification for “Operations and Maintenance Instruction Manuals” and “As-Built Drawing” requirements.

1.10 GENERAL

- A. All construction trailers, offices, equipment and materials required to be on-site shall be located at the direction of the Department. It shall be the responsibility of each Contractor to provide, maintain, and remove all facilities and equipment necessary for construction operations for individual Contracts. All restoration required due to contract operations, shall be the responsibility of each individual Contractor for his location/area of operation, at no expense to the Department. Where there is conflict with responsibility, the General Contractor shall be responsible for restoration, at no cost to the Department.
- B. These items include, but are not limited to:
 - 1. Costs and use charges associated with the facility.
 - 2. Plug-in cords, power cords, and extension cords, power tools.
 - 3. Task lighting and special lighting necessary for construction operation.
 - 4. Storage and fabrication structures/areas.
 - 5. Temporary enclosures for construction activities.
 - 6. Hoisting equipment for construction activities.
 - 7. Waste disposal facilities, including collection and legal disposal of its own waste.
 - 8. Daily cleaning of work area.
 - 9. Secure lockup of tools, materials, and equipment.
 - 10. Construction aids, services, and facilities necessary for individual construction activities.

1.11 WORK IN OCCUPIED BUILDINGS - Interior work

- A. The Contractor shall install dust-tight temporary partitions isolating the work area(s) from the other portions of the building before any interior work begins. These portions must allow access to means of egress in compliance with fire codes.
- B. Protect all existing equipment and finishes remaining in the work area(s).
- C. Where isolated work must be performed outside the partitioned work area(s), the Contractor shall provide temporary dust/dirt protection for its work. Those areas shall be cleaned by the Contractor before its employees leave the area.

1.12 WORKING HOURS

- A. The Contractor's available working hours shall be from 7:00 A.M. to 4:30 P.M., Monday through Friday, and non-holidays. The actual approved working hours will be established, by the Department, at the Initial Job Conference, in accordance with the Using Agency's standard operating schedule.
- B. Work during different hours, or work on Saturdays, Sundays, State and National Holidays or overtime work, must have the Regional Director's or his designee's prior written approval.
- C. This shall not apply in those unforeseen isolated and/or emergency instances when a particular operation must be performed in a continuous sequence that extends the working day beyond the approved working hours. Coordinate with the Department in these instances.
- D. The Department's failure to approve different working hours, weekend or holiday working hours, or overtime hours is not cause for a claim against the Department for delay.

1.13 DELIVERY, STORAGE AND HANDLING

- A. Prefinished materials shall arrive at job site in their original unopened cartons or other protective packaging necessary to protect finishes. Materials should be stored in such packages until time of application. Flat materials such as panels shall arrive and remain on adequate support to ensure flatness and prevent damage.
- B. Store all materials, equipment and bulk items prior to installation in clean, dry, well ventilated locations away from uncured concrete, masonry or from damage of any kind. Waterproof tarpaulin or polyethylene sheeting must allow for air circulation under covering.
- C. Coordinate storage location with Department.
- D. Refer to each section for specific delivery, handling and storage instructions of items specified.

1.14 PARKING

- A. Limited parking space is available on the Commonwealth property. Any parking is subject to prior approval of the Department. Location of Contractor parking shall be coordinated at the pre- construction meeting by the Using Agency.

1.15 TRAFFIC

- A. The Contractor shall establish with the Department at the Initial Job Conference a construction staging and traffic plan for the project which minimizes the construction interferences with the facility's operation. This plan is subject to the Department's approval.

1.16 ENVIRONMENTAL QUALITY CONTROL

- A. The Prime and its Subcontractors shall perform their work in a manner which shall minimize the possibility of air, water, land and noise pollution, in accordance with General Conditions Section 6.37.
- B. The name, address and telephone number of the Department of Environmental Protection District Office is furnished below. This office shall be contacted for waste disposal permits and for information concerning sites already approved for conducting waste disposal.

Luzerne County:

NorthEast (Wilke-Barre) Regional Office
2 Public Square
Wilke-Barre, PA 18701
Phone: (570) 826-2511

1.17 OFFICE FOR CONTRACTOR

- A. The Contractor shall provide and maintain, at its cost, a suitable office on the premises, if so desired by the Contractor. Contractor shall locate the office at direction of the Department

1.18 SMOKING POLICY

- A. Smoking and use of smoke-less tobacco are strictly prohibited in all buildings.

1.19 CONCRETE AND EARTHWORK

- A. All Contractors shall perform concrete work and earthwork required for their work, and shall comply with applicable Division 2 and 3 sections therefore. If any specification section contains language conflicting with requirements of applicable Division 2 and 3 sections, the most stringent requirements shall prevail.

1.20 MILITARY SECURITY REQUIREMENTS

- A. The Contractor shall be responsible for creating, updating and revising a typed list of all employees on site, along with a copy of each individual's photo identification. The list and copies of identification will be revised and updated as construction progresses. A copy of the list and copies of identification will be provided to the Department's representative, listed in 1.5 at the pre-construction conference and be available for inspection at all times during the contract period. All updates to the original list and photo identifications will be delivered to the Using Agency representative 3 days prior to those individuals entering the project site.

1.23 SANITARY FACILITIES

- A. General Conditions Section 19.3 is hereby deleted the following conditions shall pertain:
1. Sanitary facilities will, within the limitations of the existing facilities, be provided by the Client Agency at no cost. The Lead Contractor shall provide all supplies and maintain the facilities in a clean and sanitary manner at all times.
 2. The existing facilities available for the Contractor's use will be assigned by the Department at the Initial Job Conference.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 010400

SECTION 013300 - SUBMITTALS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SECTION INCLUDES/CONTENT

- A. Included in this section of the specifications is a list of approvals required for all materials incorporated into the project. The Department reserves the right to require additional approvals if necessary. No material, equipment or supplies listed herein shall be incorporated into the work until the Contractor has obtained prior approval from the Department.
- B. Submittals required by each prime contract are indicated within AF Form 66 “Schedule of Material Submittals” attached to the end of Section 013300.

1.3 SUBMITTAL PROCEDURES

- A. Refer to ‘Submittals’ of the General Conditions.
- B. Comply with the following or resubmission will be required:
 - 1. Indicate contract number, specification section and building number (as shown on the drawings) on each item submitted.
 - 2. Signify approval by stamp, initialing and dating each item prior to submission to the Professional.
- C. Items requiring testing shall be forwarded directly to the approved laboratory. The Contractor shall pay all costs associated with testing.
- D. Expedite critical materials, equipment and shop drawings, and other required submissions.
- E. Incomplete submissions will be returned for resubmission.
- F. Use of substitutions for materials, details shown on the contract drawings or called for in these specifications requires written approval from the Department. See General Conditions.

1.4 PRODUCT DATA

- A. Manufacturer's printed directions and manufacturer's standard specifications showing all dimensions, cuts, finishes, etc., as well as catalog cuts and ratings of all material will be required and shall be submitted in advance prior to application and/or installation.

1.5 TESTS

- A. Refer to 'Tests' of the General Conditions.
- B. Submit required reports listing items tested, tests conducted, and results obtained as specified.

1.6 CERTIFICATIONS

- A. Submit required certifications in written form identifying authorized representative, manufacturer, systems designer and other required data as specified.

1.7 WARRANTIES

- A. Refer to Specifications for required warranties. Copies of proposed warranties specified for products shall accompany the designated submittal of that product.

1.8 OPERATION AND MAINTENANCE MANUALS

- A. Manual Format (Use 3-ring binder):
 - 1. Title page with the following information for each system covered:
 - a. Project Title and DGS Contract Number (in capital letters)
 - b. Name of Company
 - c. Name of the individual to be called
 - d. Normal telephone numbers
 - e. Contractor's account number for project
 - 2. Index listing all sections of the Manual.
 - 3. Warranties for equipment furnished in contract. (Index tabbed)
 - 4. Complete system circuit diagrams, block diagrams, copies of all approved shop drawings, which shall clearly illustrate how all the components relate and how they are interconnected and a point wiring diagram.
 - 5. Reports, testing analysis.
 - 6. Operating instructions and maintenance instructions for all equipment and finish materials furnished.

1.9 SUBMITTAL LIST

- A. See attached AF Form 66 "Schedule of Material Submittals" for complete list of requested submissions.

PART 2 - PRODUCTS [Not Used]

PART 3 - EXECUTION [Not Used]

END OF SECTION 013300

SECTION 014000
QUALITY CONTROL TESTING

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, and “Special Conditions”, and “Division 1 - General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 GENERAL

- A. The Contractor is responsible for verifying and enforcing compliance with all requirements of the contract documents. Contractor's responsibility includes but is not limited to the following:
1. Supervision of field work to enforce contract compliance of all construction activity.
 2. Performance of all necessary field testing to verify compliance with requirements of the plans or specifications requiring adherence to measurable standards of field performance.
 3. Engaging an independent testing laboratory to perform tests as required by each specification section.
 4. Providing support services for all Quality Control Testing, including cutting and patching and repair or replacement as required.
 5. Verification of compliance with plans and specifications of all manufactured materials or equipment. Provide certificates of compliance, or other approved proof of compliance, by the manufacturers of same and submit to the professional whenever requested.
 6. All activities noted heretofore and amplified hereafter shall be considered Quality Control Services.
- B. Work not included: Quality Assurance Testing by the Department is specified in Section 014000. The Department reserves the right to perform tests under the Quality Assurance Testing program and to use those as the basis for approval or rejection at its sole discretion.

1.3 DESCRIPTION OF QUALITY CONTROL TESTING

- A. Quality Control Services include inspections, tests and reports by an independent testing laboratory or other approved agency, hereafter referred to as the Quality Control Agency. All Quality Control Services shall be at the Contractor's cost, which shall be included proportionally in all items of payment or contained in any Base Bid or Unit Price on the Proposal. Tests and Inspections are to include those specifically required by this section

and the technical sections. This responsibility is allowed by agreement with the Department of Labor and Industry. Testing and Inspection will be performed under the oversight of the Quality Assurance Agency, in accordance with requirements of Section 01401.

- B. The Quality Control Agent shall submit a Testing and Inspection Plan to the Professional for its approval, and the approval of the Quality Assurance agent for structure and for soils. The Plan shall be organized according to the requirements of Chapter 17, and chapters referenced in Chapter 17 of the international Building Code (IBC). If any tests or inspections are required that are greater than those in the IBC, they shall be so noted. The approved Plan shall become the organizing document which the QC Agent shall use to develop a system of logging test report designations and dates. This continuous log document shall be regularly distributed by email to Department and contractual parties on the distribution list that receive test and inspection reports.
- C. Quality Control Services by a Quality Control Agency or Agencies is intended to assist in the determination of probable compliance of the work with requirements specified or indicated and do not relieve the Contractor of the responsibility for compliance with Contract Document requirements.
- D. Specific testing or inspections of a structural nature required to be performed by independent Quality Control Agencies for individual construction activities are specified in this Section only. If testing or inspection requirements appear in this section and a technical section, the most stringent requirements shall prevail. If Quality Control Testing or Inspection is specified in a technical section and not in this section, it shall be required as if specified in this section. If Contract Document test requirements are exceeded by IBC requirements, IBC requirements shall prevail. Non-structural tests and inspections are in the technical specifications.
- E. Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Documents requirements.
- F. Quality Control Services required by the local municipality or other governing authorities are the responsibility of the Contractor, regardless of whether or not specified hereinafter or in the applicable specification section.
- G. Unless specifically stated otherwise, all tests listed in the specifications shall be the responsibility of the Contractor. Statements such as "test as requested by" or "as directed by" the Department of the Professional shall not be construed to indicate that the test is the responsibility of the Department.
- H. Each prime Contractor will pay for all costs in connection with its Quality Control Services. Whenever the word "Contractor" is used it shall be interpreted to mean Prime Contractor or Contractors as applicable. All Contractors performing work for which testing or inspection is required by this section are required to perform said tests/inspections appropriate for the quantity of work performed as indicated by this specification section and as required by all Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 RESPONSIBILITIES AND DUTIES OF CONTRACTOR

- A. The Contractor shall engage Quality Control Agencies to provide all Quality Control Services required to comply with the Contract Documents. These services shall be at no cost to the Department.
- B. The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and indicate non-compliance with Contract Document requirements. Likewise, the Contractor is responsible for retesting when the Department's Quality Assurance Test results prove unsatisfactory. If Quality Assurance Tests were in error, the Contractor shall be reimbursed for his retesting costs.
- C. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility.
- D. Provide the Quality Control Agency with preliminary representative samples of materials to be tested in quantities requested. If the source, quality or characteristics of an approved material changes or indicates lack of compliance with Contract requirements, submit additional samples of materials to the Quality Control Agency.
- E. When requested by the Professional, the Department, or the Quality Control Agency, the Contractor shall immediately provide reports, cutting lists, material bills, shipping bills, time and place of shipment of materials to shop and field and any relevant data on previous testing and investigations of materials.
- F. Provide casual labor and facilities:
 - 1. To provide access to the work inspected or tested by any authorized party.
 - 2. To obtain and handle samples at the site.
 - 3. To facilitate inspections and tests by the QC or QA.
 - 4. For security and protection of samples and test equipment at the project site.
- G. To facilitate the timely sequence of inspection and testing, the Contractor shall give advanced notification to the Quality Control Agency and the Department that work has progressed to a point where inspection and testing may proceed.
- H. Contractor shall pay for additional cost of Quality Control Agency services which, in the opinion of the Professional and the Department, are required because of the following:
 - 1. Failure of materials or workmanship to meet Contract requirements.
 - 2. Materials or practices not complying with the technical specifications which could possibly result in defective and unacceptable work.
 - 3. Changes in source, quality or characteristics of materials.
 - 4. Site cured cylinders requested by the Contractor.

- I. The Quality Control Agency shall submit a certified written report of each inspection, test or similar service to the Design Professional, the Quality Assurance Agent, the Bureau of Construction Regional Director, the BOC Inspector Supervisor, the BOC Field, and the Contractor, with additional copies directly to any governing authority when that authority so directs. All reports shall be submitted within 24 hours of when the inspection, test or similar service was conducted.
- J. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address and telephone number of testing agency.
 - 4. Dates and location of samples and tests or inspections.
 - 5. Names of individuals making the inspection or test.
 - 6. Designation of the Work and test method.
 - 7. Identification of product and specification section.
 - 8. Complete inspection or test data.
 - 9. Test results and an interpretation of test results.
 - 10. Ambient conditions at the time of sample taking and testing.
 - 11. Comments or professional opinion as to whether inspected or tested work complies with Contract Document requirements.
 - 12. Name and signature of Quality Control Agency inspector.
- K. The QC Agent shall cooperate in using standard forms/procedures developed by the Department that assist in accomplishing the tasks required.
- L. Engage independent testing laboratories, whose employees assigned to the Project and tests performed comply with ASTM E 329, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction. The testing laboratory must be accredited and audited by a qualified national authority. The Contractor is to submit the name and credentials of the proposed QC Agent to the Design Professional and the Department for acceptance.
- M. Upon completion of inspection, testing, sample taking and similar activities, repair the damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Comply with the Contract Document requirements for "Cutting and Patching". Protect work exposed by or for Quality Control Testing activities, and protect repaired work.

3.2 RESPONSIBILITIES AND DUTIES OF QUALITY CONTROL AGENCIES

- A. Quality Control Agencies engaged to perform inspections, sampling and testing of materials and construction shall cooperate with the Professional, the Quality Assurance Agent, the Department, Labor and Industry, and the Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests. If it is determined by the Department that the personnel provided are not qualified or are not working in the best interests of the Project for the tests performed, the Contractor, through

their Quality Control Agent, shall immediately replace or supplement the subject personnel.

- B. Quality Control Agencies shall notify the Department, the Quality Assurance Agent, the Professional, and the Contractor immediately of irregularities or deficiencies observed in the Work during performance of its services, and take all actions required by Chapter 17 of the IBC.

END OF SECTION

SECTION 015000 - TEMPORARY UTILITIES

Part 1 GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions” and “Division 1 - General Requirements” form a part of this Section by reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 TEMPORARY SERVICES DURING CONSTRUCTION

- A. The designated Contractor shall install, operate, protect and maintain the respective temporary services as hereinafter specified during the construction of the entire project.
- B. Temporary connections to new and/or existing permanent service lines shall be made at locations as directed by the Department, and when the temporary service lines are no longer required, they shall be removed by the Contractor. Any part or parts of the permanent service lines, grounds and building, disturbed and damaged by the installation and/or removal of the temporary service lines, shall be restored to their original condition by the Contractor responsible for the temporary installation.
- C. If the Contractor fails to carry out its responsibility in supplying temporary services as set forth in this contract it is responsible for such failure and the Department may take such action as it deems proper for the protection and conduct of the work and shall deduct the cost involved from the amount due the Contractor. Only those temporary utilities required for construction need to be extended to the work area(s).

1.3 CONSTRUCTION LIGHT AND POWER

- A. The Electrical Contractor shall install, operate, protect and maintain the temporary service for construction light and power. The Contractor shall extend the temporary wiring throughout the project work areas, properly insulated and installed in accordance with Article 305 of the National Electrical Code. All wiring shall be installed by a licensed electrician.
- B. Existing electrical service can be used to provide power for construction.
- C. The Electrical Contractor shall extend temporary electrical power throughout the building to provide adequate light and power, to the satisfaction of the Department, for the proper conduct of the work as required. The Electrical Contractor shall also provide single-phase, 208-volt power service, if required. As the construction progresses, it shall extend the temporary services to all areas where required, with a minimum of 100W light and duplex power outlet 20' on center minimum and at least in every room or space. The maximum size motor to be used at any power service shall be limited to 5 hp. Construction light and power provided shall fully comply with all provisions for this service of the National Electric Code and OSHA.

- D. Where a service of a type other than that as herein mentioned is required, each Contractor requiring same shall provide such service and necessary equipment at his own expense.

1.4 WELDING

- A. Any Contractor using electrical power for welding on the site shall use self-contained engine generating units.

1.5 FIRE EXTINGUISHERS

- A. Each Contractor shall provide UL listed, NFPA approved fire extinguishers (ten (10) lb. minimum) at the construction site during operations, suitable for all types of fires in accordance with OSHA.

1.6 INTERRUPTION OF SERVICES

- A. Each Prime Contractor shall have all needed equipment and material to complete planned work at the site prior to shutting down any system.

Part 2 PART 2 – PRODUCTS (Not Used)

Part 3 PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Additional Division 1 Specifications and Contractual Requirements included within the Project Package per the PA Department of Military and Veteran’s Purchasing Department and/or the United States Fiscal and Property Office’s Purchasing and Contracting Division.

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Warranties.
 - 3. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 2 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.4 SUBSTANTIAL COMPLETION (BENEFICIAL OCCUPANCY)

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Submit specific warranties, workmanship bonds, maintenance service agreements, final

- certifications, and similar documents.
 3. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction, damage or settlement surveys, property surveys, and similar final record information.
 4. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 5. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 6. Complete startup testing of systems.
 7. Submit test/adjust/balance records.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Advise Owner of changeover in heat and other utilities.
 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 11. Complete final cleaning requirements, including touchup painting.
 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Government Design Professional and Government Inspector will either proceed with inspection or notify Contractor of unfulfilled requirements. The Contracting Officer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Design Professional and/or Inspector, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.5 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to the Government Contracting Office's "Payment Procedures."
 2. Submit certified copy of Government Design Professional's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by the Design Professional. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Government Design Professional and Inspector will either proceed with inspection or notify

Contractor of unfulfilled requirements. The Contracting Officer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.6 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 1. Organize list of spaces in sequential order, starting with exterior areas first then proceeding on the interior from the Main Entrance clockwise throughout the facility.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date
 - c. Name of Contractor.
 - d. Page number.

1.7 WARRANTIES

- A. Submittal Time: Submit written warranties on request of the Government Design Professional (per FORM 66's) for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents within the Project Operation and Maintenance Manuals.

PART 2 - EXECUTION

2.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

- a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
- b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
- c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
- d. Remove tools, construction equipment, machinery, and surplus material from Project site.
- e. Remove snow and ice to provide safe access to building.
- f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
- g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- h. Sweep concrete floors broom clean in unoccupied spaces.
- i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
- j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
- k. Remove labels that are not permanent.
- l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- n. Replace parts subject to unusual operating conditions.
- o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
- p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
- q. Clean ducts, blowers, and coils if units were operated without filters during construction.
- r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
- s. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of

lawfully.

PART 3 - PRODUCTS

3.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

END OF SECTION 017700

SECTION 017823 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Additional Division 1 Specifications and Contractual Requirements included within the Project Package per the PA Department of Military and Veteran’s Purchasing Department and or United States Fiscal and Property Office’s Purchasing and Contracting Division.

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Emergency manuals.
 - 3. Operation manuals for systems, sub-systems, and equipment.
 - 4. Maintenance manuals for the care and maintenance of products, materials, finishes, systems and equipment.
- B. Related Sections include the following:
 - 1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
 - 3. Divisions 2 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.4 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

- B. Subsystem: A portion of a system with characteristics similar to a system.

1.5 SUBMITTALS

- A. Final Submittal: Submit one copy of each manual in final form at least 14 days before final inspection. Government Design Professional will return copy with comments within 7 days after final inspection.
 - 1. Correct or modify each manual to comply with Architect's comments. Submit 3 copies of each corrected manual within 7 days of receipt of Architect's comments.

1.6 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
1. Subject matter included in manual.
 2. Name and address of Project.
 3. Date of submittal.
 4. Name, address, and telephone number of Contractor.
 5. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents per CSI Specifications (Divisions 2-16). Within each organize each Division by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

- a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
- b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY INFORMATION

- A. Content: Organize into a separate section for each of the following:
 1. Type of emergency.
 2. Emergency instructions.
 3. Emergency procedures.
- B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 1. Fire.
 2. Flood.
 3. Gas leak.
 4. Water leak.
 5. Power failure.
 6. Water outage.
 7. System, subsystem, or equipment failure.
 8. Chemical release or spill.
- C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- D. Emergency Procedures: Include the following, as applicable:
 1. Instructions on stopping.
 2. Shutdown instructions for each type of emergency.
 3. Operating instructions for conditions outside normal operating limits.
 4. Required sequences for electric or electronic systems.
 5. Special operating instructions and procedures.

2.4 OPERATION INFORMATION

- A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. System, subsystem, and equipment descriptions.
 2. Operating standards.
 3. Operating procedures.
 4. Operating logs.

5. Wiring diagrams.
6. Control diagrams.
7. Piped system diagrams.
8. Precautions against improper use.
9. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
6. Normal shutdown instructions.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE

- A. Content: Organize into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Product Information: Include the following, as applicable:

1. Product name and model number.
 2. Manufacturer's name.
 3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE INFORMATION

- A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
- B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
1. Standard printed maintenance instructions and bulletins.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.

4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training videotape, if available.
- E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance information.
- B. Emergency Information: Compile complete documentation of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- C. Product Maintenance Information: Compile complete documentation of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- D. Operation and Maintenance Information: Compile complete documentation of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
- F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
1. Do not use original Project Record Documents as part of operation and maintenance manuals.
 2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

END OF SECTION 017823

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Additional Division 1 Specifications and Contractual Requirements included within the Project Package per the PA Department of Military and Veteran’s Purchasing Department and or United States Fiscal and Property Office’s Purchasing and Contracting Division.

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings in CAD Format.
 - 2. Record Specifications.
 - 3. Record Product Data.
 - 4. Project Cost Analysis
- B. Related Sections include the following:
 - 1. Division 1 Section "Closeout Procedures" for general closeout procedures.
 - 2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 2 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.4 SUBMITTALS

- A. Record Drawings: Comply with the following:
 - 1. One (1) Hard Copy of Contractor As-Built Drawings. Drawing Size to be 24”x36”.
 - 2. One (1) CD Rom containing CAD based Contractor As-Built Drawings.

- B. Record Product Data: Submit as part of the Project Operation and Maintenance Manuals.
- C. Project Cost Analysis: To be submitted when the Owner takes Beneficial Occupancy.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Contractor to maintain one (1) red-lined set of drawings throughout the duration of the project construction phase. Prior to the substantial completion, contractor shall transfer all red-lined mark-ups to the Government provided CAD drawings.
 - 1. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or No Cost Field Change.
 - k. Changes made following Government Design Professional's written orders.
 - l. Field records for variable and concealed conditions.
 - B. Preparation: Contractor to transfer all construction red-line mark-ups from the record set onto the Government provided CAD drawings. Government drawings are AutoDesk (AutoCad) format and this format shall be maintained by the contractor.
 - 1. Contractor to create a CAD layer within each Government provided CAD drawing and label it;
"CONTR_AS-BUILTS"
Note: All contractor related As-Built changes shall be contained to this layer.
 - C. Paragraph and subparagraphs below describe a procedure for assembling nearly correct reproducible Drawings. Add requirements for special printing methods on specific material, such as moisture-sensitive prints on mylar film. Delete if not required.
 - D. Record Plans: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Government Design Professional and/or Contracting Officer. When authorized, prepare a full set of corrected transparencies of the Contract Drawings and Shop Drawings.
 - 1. Refer instances of uncertainty to the Government Design Professional for resolution.
 - E. Format:

1. Record Prints: Contractor shall plot one (1) 24"x36" (min.) set of As-Built drawings to submit for review. As-Built set shall be organized and bound per the DMVA-BMCE Cover Sheet. Hardcopy set should contain an "AS-BUILT" stamp located in the lower right-hand corner of each sheet.
2. AutoDesk (AutoCad) Format, Release 2010 (or newer).

2.2 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, Specifications and Record Drawings where applicable.

2.3 PROJECT COST ANALYSIS

- A. Preparation: Each Prime Contractor shall maintain construction cost throughout the duration of the project. The following cost shall be submitted upon the Owner taking Beneficial Occupancy of the facility.
- B. Building Cost: Overall construction cost of the facility, excluding all site utilities. Cost shall incorporate all Change Order amounts into this breakout.
- C. Site Utilities: Contractor shall provide an updated cost and total linear footage for the following site utility installations:
 1. Domestic Water
 2. Sanitary Sewer
 3. Electrical Service
 4. Gas/Propane Service

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submit in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as

they occur; do not wait until the end of Project.

- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Government Design Professional, Government Inspector and/or Contracting Officer's reference during normal working hours.

END OF SECTION 017839

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections "General Conditions of the Construction Contract," "Special Conditions," and "Division 1 – General Requirements" form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:

1. Footings.
2. Foundation Walls.
3. Slab-on-grade.
4. Aprons and Stoops.
5. Bollards.

- B. Related Sections:

1. Division 31 Section "Earth Moving" for drainage fill under slabs-on-grade.

1.3 REFERENCES/ACRONYMS

- A. The following referenced material shall apply to this specification and have the same force and effect as if printed in full herein:

1. ACI = American Concrete Institute
2. CRSI = Concrete Reinforcing Steel Institute
3. ASTM = American Society of Testing and Materials
4. PennDOT = Pennsylvania Department of Transportation

ACI 301-89	Specifications for Structural Concrete for Buildings.
ACI 318	Building Code Requirements for Reinforced Concrete
ACI 347	Recommended Practice for Concrete Formwork
ACI 304	Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 302	Recommended Practice for Concrete Floor and Slab Construction
ACI 315	Detail Manual
ACI 308	Standard Practice for Curing Concrete
CRSI	Manual of Standard Practice

CRSI	Recommended Practice for Placing Reinforcing Bars
PennDOT	Publication 408 (latest edition) with supplements
ASTM C 94	Standard Specification for Ready-Mixed Concrete
ASTM C 150	Specification for Portland Cement
ASTM A 497	Standard Specification for Steel Welded Fabric, Deformed for Concrete Reinforcement
ASTM A 185	Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 615 A 615M	Standard Specification for Deformed and Plain Billet Steel bars for Concrete Reinforcement
ASTM C 260	Standard Specification for Air-Entrained Admixtures for Concrete
ASTM C 309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

1.4 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS’, attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.5 QUALITY ASSURANCE

- A. **Installer Qualifications:** A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Only concrete obtained from PennDOT approved/certified batch plant shall be used in conjunction with this project.
- C. **Source Limitations:** Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- D. **Concrete Testing Service:** Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- E. Prior to each pour, contractor shall provide a Concrete Plant Batch Slip for each batch utilized for the given pour. The Batch Slip shall be submitted to the Inspector by the first delivery truck for each batch. The Batch Slip shall contain the following information (at a minimum):

1. Date.
2. Plant Name and Location.
3. Batch Number.
4. Batch Time.
5. Dry materials and weights.
6. Liquids and volumes.
7. Admixtures and volumes.

F. Prior to the starting of a pour, concrete delivery drivers shall provide the on-site Inspector with a delivery slip. Delivery slips shall denote the following information:

1. Truck No., Driver's Name, and Batch Plant.
2. Time stamp for batch and/or time driver left plant.
3. Concrete Mix.
4. Batch Slump.
5. Admixtures.
6. Time Mixer arrived at Site.

Note: At no time will a driver be granted permission to off-load if a valid delivery slip is not provided.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 1. Plywood, metal, or other approved panel materials.
 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
 - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - c. Structural 1, B-B or better; mill oiled and edge sealed.
 - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.

- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, Bollards and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.
- E. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- F. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- G. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- H. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive damp proofing or waterproofing.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
- D. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from galvanized-steel wire into flat sheets.
- E. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884, Class A coated, Type 1, steel wire, with less than 2 percent damaged coating in each 12-inch wire length. (Exterior locations).

2.3 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated. (Exterior locations)
- C. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follow:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I, gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class F.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
 - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.

2.5 ADMIXTURES

- A. No admixtures will be permitted without prior notification and approval of the Design Professional and/or Inspector.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 VAPOR RETARDERS

- A. Plastic Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.7 FLOOR AND SLAB TREATMENTS

- A. Penetrating Liquid Floor Treatment: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces.

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTMO M 182, Class2, burlap cloth made from jute or kenaf, weighing approx. 9oz./sq.yd. when dry.
- C. Moisture Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable (It shall be the contractors responsibility to verify availability of potable water. If potable water is NOT available at project site, contractor will be responsible for providing water tanks).
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating. Maximum VOC emission of 350 g/L or less. Product shall not interfere with bonding of floor covering where used.

2.9 RELATED MATERIALS

- A. Contraction Joint (C.J.)
 1. Preformed two-piece plastic strip with a depth of 2".
 2. Manufacturer/Catalog Number: W.R. Meadows Sealtight catalog #324, Speed-E-Joint.
- B. Keyed Construction Joint (K.C.J.)
 1. ¼" wide by the full thickness of concrete slab asphaltic type with centered key having pre-punched openings at 24"o.c. for steel stakes. Stakes shall be minimum 18 gauge steel, 3/8" channel type by 15" long.
 2. Manufacturer/Catalog Number: W.R. Meadows Sealtight catalog #321, Premoulded Tongue and Groove Joint.

C. Expansion Joint (E.J./E.E.J.)

1. ½" wide by the full thickness of concrete slab, asphaltic self-sealing type and shall conform to ASTM D 994.
2. Manufacturer/Catalog Number: W.R. Meadows Sealtight catalog #320 Asphaltic Expansion Joint.

2.10 CONCRETE MIXTURES

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.

C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:

1. Fly Ash: 25 percent.

D. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
2. Use water-reducing, high range water-reducing or plasticizing admixture in concrete as required for placement and workability.
3. Use water-reducing and retarding admixture when required by high temperature. Low humidity or other adverse placement conditions.
4. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structural slabs, concrete required to be watertight and concrete with a water-cementitious materials ratio below .50.

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Footings: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Cementitious Materials Content: 0.45.
3. Slump Limit: 4 inches plus or minus 1 inch.

B. Foundation Walls, Grade Beams, Column Piers: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum Cementitious Materials Content: 0.45.
3. Slump Limit: 4 inches plus or minus 1 inch.
4. Air Content: When determined necessary, 5-1/2 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.

- C. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
1. Minimum Compressive Strength: 3500 psi at 28 days.
 2. Maximum Cementitious Materials Content: 0.50.
 3. Slump Limit: 4 inches plus or minus 1 inch.
 4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
- D. Sidewalks:
1. Minimum Compressive Strength: 3000 psi at 28 days.
 2. Maximum Cementitious Materials Content: 0.45.
 3. Slump Limit: 4 inches, plus or minus 1 inch.
 4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
- E. Bollards:
1. Minimum Compressive Strength: 3000 psi at 28 days.

2.12 FABRICATING REINFORCEMENT

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

2.13 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
1. Class A, 1/8 inch for smooth-formed finished surfaces.
 2. Class C, 1/4 inch for rough-formed finished surfaces.
- D. Construct forms tight enough to prevent loss of concrete mortar.

- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Do not chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by the Inspector.

3.4 VAPOR RETARDERS

- A. Plastic Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.5 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Locate joints for beams, slabs, joists and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

4. Locate horizontal joints in walls at underside of slabs and at the top of footings or floor slabs.
 5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete. Contractor shall contact the Government Inspector at least 24 hours prior to a pour to schedule all necessary inspections. Contractor shall not proceed with a concrete pour without the knowledge of the Inspector and/or Design Professional.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by the Inspector and/or Design Professional.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301 and only under supervision of the on-site Inspector.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- G. Hot-Weather Placement: Comply with ACI 301 and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces not exposed to public view.

- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
 - 1. Apply scratch finish to surfaces indicated.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces indicated.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, and ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces approved for “broom” finish by the Design Professional. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.10 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

3.11 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-for spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-in lap over adjacent absorptive covers
 - 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 3. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer, unless

manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
 - 1. Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

3.13 CONCRETE SURFACE REPAIRS

- A. General Note: It will be at the Inspector's or Design Professional's discretion to request the repair of an area due to damage and/or flaws in materials or installation. A repair will only be granted to areas smaller than 100 sf. Areas in excess of 100 sf. will be evaluated by the Government and determined if necessary to completely remove and replace the defective area. At no time will the cost of repair and/or replacement be the burden of the Government.
- B. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- C. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, pop outs, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- F. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

3.14 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Contractor shall notify the Inspector and/or Design Professional at least 24 hours prior to a concrete pour. The Government Inspector will provide an inspection of the pour area and determine if all aspects are suitable for the pouring of concrete. The following is a lists of items that will be included in the Government's Pre-Pour Inspection:
 1. Steel Reinforcement Placement (Rebar and/or Welded Wire Fabric).
 2. Reinforcement Welds
 3. Headed Bolts
 4. Forms
 5. Stone Base (Thickness and Compaction)
 6. Pour area is clear of all foreign materials, water, mud, etc.
 7. Verification of Design Mix
 8. Approval of placement procedure.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Testing Frequency: It shall be at the discretion and right of the On-Site Government Inspector to request testing at closer intervals based on visible inconsistencies in product and/or climate conditions.
4. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
5. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.

Compression Test Specimens: ASTM C 31/C 31M.

- a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
- b. Cast and field cure one set of two standard cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to the Inspector, Design Professional, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in

- Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by the Inspector but will not be used as sole basis for approval or rejection of concrete.
 12. Additional Tests: Testing agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by the Inspector.
 13. Additional testing at Contractor's expense will be performed to determine compliance of replaced or additional work with specified requirements.
 14. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.
- D. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION

SECTION 042000

UNIT MASONRY

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract,” “Special Conditions,” and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

A. Section Includes:

1. Concrete Masonry Units.
2. Masonry Joint Reinforcement.
3. Ties and anchors.
4. Embedded flashing.
5. Miscellaneous masonry accessories.

B. Related Sections:

1. Division 07 Section “Division 7 Section "Joint Sealants" for sealing control and expansion joints in unit masonry.

1.3 REFERENCES/ACRONYMS

- A. The following referenced material shall apply to this specification and have the same force and effect as if printed in full herein:

1. SPCI = Structural Clay Products Institute
2. NCMA = National Concrete Masonry Association
3. ASTM = American Society for Testing and Materials (latest edition)
4. ACI= American Concrete Institute

SPCI	Building Code Requirements for Engineered Brick Masonry
NCMA	Acoustical, Fire and Energy Performance of Concrete Masonry
ACI 530-99	Building Code Requirements for Masonry Structures
ACI 530.1-99	Specifications for Masonry Structures
ACI 530	Cold Weather Protection of Masonry Construction
ASTM C90	Hollow Load Bearing Concrete Masonry Units
ASTM C270	Specifications for Mortar for Unit Masonry
ASTM C207	Specifications for Hydrated Lime for Masonry Purposes
ASTM A82	Specification for Carbon Steel Wire
ASTM C150	Specifications for Portland Cement

ASTM A153	Standard Specifications for Zinc-Coating (Hot-Dip) on Iron or Steel Hardware
ASTM A82	Steel Wire, Plain for Concrete Reinforcement

1.4 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS,’ attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.5 QUALITY ASSURANCE

- A. Masonry Standard: Comply with ACI 530.1/ASCE 6/TMS 602 unless modified by requirements in the Contract Documents.
- B. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- D. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire-resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by other means, as acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original unopened packaging and/or containers labeled with the manufacturer’s name, brand name, model number, installation instructions, storage conditions and lot numbers.
- B. Store and protect materials from damage and weather in accordance with manufacturer’s instructions, except as specified otherwise.
 - 1. All concrete masonry units and split face block shall be stored off the ground and covered with tarps or other suitable material to protect it from inclement weather.
 - 2. Masonry sand for mortar mix shall be stored on and covered with 6 mil. plastic sheeting of heavy-duty tarps to prevent excess wetting.
 - 3. All metal accessories to be installed in conjunction with unit masonry work shall be stored off the ground and covered with weatherproof tarps to prevent rusting.

4. Verify storage area with Using Agency so as not to interfere with daily or monthly operations.
 5. The Department shall accept absolutely no liability for any materials stored on site. It shall be the complete responsibility of the Contractor to provide whatever means necessary to proper secure any and all stored materials.
- C. Any materials damaged either during shipping or storage at the site shall be replaced at Contractor's expense.

1.7 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
1. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that comes in contact with such masonry.
1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.
 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners, unless otherwise indicated.
- B. Hollow Concrete Masonry Units: complying with ASTM C 90.
 - 1. Weight Classification: Normal weight.
 - 2. Size: As depicted on Contract Design Documents.
 - 3. Colors and Patterns: As selected by Government Design Professional from manufacturer's full range.

2.3 MORTAR AND GROUT MATERIALS

- A. Regional Materials: Provide aggregate for mortar and grout, cement, and lime that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of Project site.
- B. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- E. Masonry Cement: ASTM C 91.
- F. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
- G. Colored Cement Product: Packaged blend made from masonry cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 - 1. Formulate blend as required to produce color indicated or, if no indicated, as selected from manufacturer's standard colors.
 - 2. Pigments shall not exceed 10 percent of Portland cement by weight.
 - 3. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
- H. Aggregate for Mortar: ASTM C 144.
 - 1. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 2. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

- I. Aggregate for Grout: ASTM C 404.
- J. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- K. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent by same manufacturer.
- L. Water: Potable.

2.4 REINFORCEMENT

- A. Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60. (Size and locations per Project Structural Design Documents).
- B. Masonry Joint Reinforcement, General: ASTM A 951.
 - 1. Exterior Walls: Hot-dip galvanized carbon or Stainless steel.
 - 2. Wire Size for Side Rods: W1.7 or 0.148-inch diameter.
 - 3. Wire Size for Cross Rods: W1.7 or 0.148-inch diameter.
 - 4. Wire Size for Veneer Ties: W1.7 or 0.148-inch diameter.
 - 5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 - 6. Provide in lengths of not less than 10 feet.
 - 7. Masonry Joint Reinforcement for Single-Wythe Masonry: Either ladder or truss type with single pair of side rods.

2.5 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
 - 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304.
 - 3. Galvanized Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 zinc coating.
 - 4. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, hot-dip galvanized after fabrication to comply with ASTM A 153/A 153M.
 - 5. Stainless-Steel Sheet: ASTM A 666, Type 304.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.
 - 1. Wire: Fabricate from 1/4-inch-diameter, hot-dip galvanized steel wire.
- D. Adjustable Anchors for Connecting to Structure: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.

1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch diameter, hot-dip galvanized steel wire.
 2. Tie Section for Steel Frame: Triangular-shaped wire tie, sized to extend within 1 inch of masonry face, made from 0.25-inch diameter, hot-dip galvanized steel wire.
 3. Connector Section for Concrete: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.053-inch thick steel.
 4. Tie Section for Concrete: Corrugated metal ties with dovetail tabs for inserting into dovetail slots in concrete and sized to extend to within 1 inch of masonry face.
- E. Partition Top anchors: 0.105-inch-thick metal plate with 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
- F. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
 - a. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.05 inch.
 2. Contractor's Option: Unless otherwise indicated, provide any of the following types of anchors:
 - a. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal anchor section.
 - b. Anchor Section: Rib-stiffened, sheet metal plate with screw holes top and bottom, having slotted holes for inserting wire tie.
 - c. Fabricate sheet metal anchor sections and other sheet metal parts from 0.075-inch-thick, steel sheet, galvanized after fabrication.
 - d. Wire Ties: Triangular-, rectangular-, or T-shaped wire ties fabricated from 0.187-inch-diameter, hot-dip galvanized steel wire.
- G. Anchor Bolts: Headed or L-shaped steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153/A 153M, Class C; of dimensions indicated.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated, complying with the follows:
1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch thick.
 2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
 3. Fabricate through-wall metal flashing embedded in masonry from stainless steel, with ribs at 3-inch intervals along length of flashing to provide an integral mortar bond.

4. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counter flashing.
 5. Fabricate through-wall flashing with drip edge, unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
 6. Fabricate through-wall flashing with sealant stop unless otherwise indicated. Fabricate by bending metal back on itself 3/4 inch at exterior face of wall and down into joint 3/8 inch to form a stop for retaining sealant backer rod.
- B. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from high-density polyethylene incorporating chemical stabilizers that prevent UV degradation. Cell flashing pans have integral weep spouts that are designed to be built into mortar bed joints and weep collected moisture to the exterior of CMU walls and that extend into the cell to prevent clogging with mortar.
- C. Solder and Sealants for Sheet Metal Flashings:
1. Solder for Stainless Steel: ASTM B 32, Grade Sn60, with acid flux of type recommended by stainless-steel sheet manufacturer.
 2. Elastomeric Sealant: ASTM C 920, chemically curing silicone sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Weep/Vent Products: Use one of the following unless otherwise indicated:
1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
 2. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.

3. Vinyl Weep Hole/Vent: T-shaped units made from flexible PVC, consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color selected by Architect.
- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. Provide one of the following configurations:
 - a. Strips, full-depth of cavity and 10 inches wide, with dovetail shaped notches 7 inches deep that prevent mesh from being clogged with mortar droppings.
 - b. Strips, not less than 3/4 inch thick and 10 inches wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.
 - c. Sheets or strips full depth of cavity and installed to full height of cavity.
 - d. Sheets or strips not less than 3/4 inch thick and installed to full height of cavity with additional strips 4 inches high at weep holes and thick enough to fill entire depth of cavity and prevent weep holes from being clogged with mortar.

2.8 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
 2. Limit cementitious materials in mortar to portland cement, mortar cement, and lime.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. For masonry below grade or in contact with earth, use Type M.
 2. For reinforced masonry, use Type S.

3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type N.
- D. Pigmented Mortar: Use colored cement product or select and proportion pigments with other ingredients to produce color required.
1. Mix to match Government Design professional's selected block sample.
- E. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness depicted on design drawings. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- D. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.

1. Mix units from several pallets or cubes as they are placed.
- E. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/4 inch in 20 feet or 1/2 inch maximum.
 2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet or 1/2 inch maximum.
 3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/4 inch in 20 feet, or 1/2 inch maximum.
 4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
 5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
 6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.
 7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 inches. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.

- H. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated or shown on Project Structural Design Documents.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).
 - 2. For location of elements in plan do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
 - 3. For location of elements in elevation do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
 - 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.
 - 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.

5. For lines and surfaces do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch (9 mm) or minus 1/4 inch (6 mm).
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm).

3.6 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
1. Space reinforcement not more than 16 inches o.c.
 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, and other special conditions.

3.7 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:
1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
 2. Embed tie sections in masonry joints. Provide not less than 2 inches of air space between back of masonry veneer and face of sheathing.
 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 24 inches o.c. horizontally with not less than 1 anchor for each 2.67 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 36 inches, around perimeter.

3.8 ANCHORING MASONRY TO STRUCTURAL MEMBERS

- A. Anchor masonry to structural members where masonry abuts or faces structural members to comply with the following:
 - 1. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 - 2. Anchor masonry to structural members with anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

3.9 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows:
 - 1. Install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
- C. Provide horizontal, pressure-relieving joints by either leaving an air space or inserting a compressible filler of width required for installing sealant and backer rod specified in Division 7 Section "Joint Sealants," but not less than 3/8 inch.
 - 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.10 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 - 2. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.

3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall and adhere flexible flashing to top of metal drip edge.
 4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
1. Use specified weep/vent products or open head joints to form weep holes.
 2. Space weep holes 24 inches o.c. unless otherwise indicated.
 3. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
- D. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- E. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products or open head joints to form vents.
1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.11 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
1. Comply with requirements in ACI 530.1/ASCE 6/TMS 602 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 2. Limit height of vertical grout pours to not more than 60 inches.

3.12 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage qualified independent inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
 - 1. Place grout only after inspectors have verified compliance of grout spaces and grades, sizes, and locations of reinforcement.

3.13 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
 - 2. Protect surfaces from contact with cleaner.
 - 3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 4. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
 - 6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.14 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Excess Masonry Waste: Remove excess clean masonry waste and other masonry waste and legally dispose of off Owner's property.

END OF SECTION

SECTION 055000
METAL FABRICATIONS

PART 1 – GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract,” “Special Conditions,” and “Division 1 – General Requirements” form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

A. Section Includes:

- 1. Steel Bollards
- 2. Plastic Bollard Covers

- B. All work under this section shall be in compliance with other trades and sections of this specification.

C. Related Sections:

- 1. Division 03 Section “Cast-In-Place Concrete.”

1.3 REFERENCES/ACRONYMS

- A. The following referenced material shall apply to this specification and have the same force and effect as if printed in full herein. All reference material shall be the latest published edition, unless otherwise noted:

- 1. ASTM = American Society for Testing and Materials (latest edition)

ASTM A 53/A 53M Standard Specifications for Pipe, Steel, Black and Hot Dipped, Zinc-Coated, Welded and Seamless

1.4 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS,’ attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.5 QUALITY ASSURANCE

- A. All materials under this Section shall be factory certified, first run material, seconds will not be permitted.
- B. Materials shall be compatible in every way, with all other components. Substitutions will not be permitted after approved descriptive data and/or shop drawings have been acted upon and distributed.
- C. Also see Removal of Non-Compliant Materials this PART.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original unopened packaging and/or containers labeled with the manufacturer's name, brand name, model number and installation instructions.
- B. Store and protect materials from damage and weather.
 - 1. Verify storage area with Using Agency so as not to interfere with daily or monthly operations.
 - 2. The Department shall accept absolutely no liability for any materials stored on site. It shall be the complete responsibility of the Contractor to provide whatever means necessary to proper secure any and all stored materials.
- C. Any materials damaged either during shipping or storage at the site shall be replaced at Contractor's expense.

1.7 TESTING

- A. The Department retains the right to test any and/or all of the materials required under this Section.
 - 1. Cost for such testing shall be paid for by the Department unless such testing confirms that any such material is not in compliance with the requirements of this Specification in which case the Contractor shall reimburse the Department such cost and shall pay for any retesting costs.
- B. Also see Removal of Non-Compliant Materials this PART.

1.8 REMOVAL OF NON-COMPLIANT MATERIALS

- A. Any material found not to be in compliance with the requirements of this Section, through testing and/or other means, whether installed individually and/or as a part of a system or not, shall be immediately removed from the job site and replaced with compliant materials at no additional cost to the Contract.

PART 2 – PRODUCTS

2.1 STEEL PIPE BOLLARDS

- A. Bollards shall be fabricated from Schedule 40 steel pipe of the diameter and length shown on the drawings
- B. Bollards shall receive one shop applied coat of primer, color to be fabricators choice.

2.2 BOLLARD COVERS

- A. Covers shall be Polyethylene Thermoplastic (LDPE) tubes, nominal 0.25" thick x length and diameter of the associated bollard.
- B. Cover shall be treated for ultra-violet resistance.
- C. Cover shall have a smooth surface of single piece construction with top dome shaped.
- D. Color: OSHA Safety Yellow.
- E. Manufacturer/Product: Ideal Shield/Standard Bumper Post Sleeve.

PART 3 - EXECUTION

3.1 BOLLARD INSTALLATION

- A. Install bollards of the diameter, length and locations shown on the drawings.
 - 1. Bollards shall be installed plumb, rigid and true in all directions.
 - 2. Bollards shall be filled solid with concrete.

3.2 BOLLARD COVER INSTALLATION

- A. Place plastic bollard covers on all bollards.
 - 1. Prior to placement of covers sand smooth any rusted and/or damaged areas of the prime coat and repaint with like primer.
 - 2. Cut covers to the proper length Covers shall be held in place with neoprene adhesive tape.
 - 3. Covers shall be held in place with neoprene adhesive tape.

3.3 PROTECTION

- A. Contractor shall employ whatever means necessary to protect bollards from subsequent construction operations.

END OF SECTION

SECTION 079200

JOINT SEALANTS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes joint sealants for the following applications:
1. Exterior joints in the following vertical surfaces and horizontal non-traffic surfaces:
 - a. Control and expansion joints in unit masonry.
 - b. Joints between metal panels.
 - c. Joints between different materials listed above.
 - d. Perimeter joints between materials listed above and frames of doors and windows.
 - e. Other joints as indicated.
 2. Exterior joints in the following horizontal traffic surfaces:
 - a. Tile control and expansion joints.
 - b. Other joints as indicated.
 3. Interior joints in the following vertical surfaces and horizontal non-traffic surfaces:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - e. Other joints as indicated.
 4. Interior joints in the following horizontal traffic surfaces:
 - a. Control and expansion joints in tile flooring.
 - b. Other joints as indicated.

1.3 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and 'SCHEDULE OF MATERIAL SUBMITTALS', attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized Installer who is approved or licensed for installation of elastomeric sealants required for this Project.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 - 2. When joint substrates are wet.
 - 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 4. Contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.7 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two (2) years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five (5) years from date of Substantial Completion.
- C. Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
1. Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 2. Disintegration of joint substrates from natural causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
- B. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
1. Sealants: 250 g/L.
 2. Sealant Primers for Nonporous Substrates: 250 g/L.
 3. Sealant Primers for Porous Substrates: 775 g/L.
- C. Colors of Exposed Joint Sealants: As indicated by manufacturer's designations.

2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- B. Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- C. Suitability for Contact with Food: Where elastomeric sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- D. Multicomponent Pourable Neutral-Curing Silicone Sealant:
1. Type and Grade: M (multicomponent) and P (pourable).
 2. Class: 25.
 3. Uses Related to Exposure: T (traffic) and NT (non-traffic).

4. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.

- a. Use O Joint Substrates: Galvanized steel.

E. Single-Component Pourable Neutral-Curing Silicone Sealant:

1. Type and Grade: S (single component) and P (pourable).
2. Class: 100/50.
3. Uses Related to Exposure: NT and T (traffic).
4. Uses Related to Joint Substrates: M A and O, as applicable to joint substrates indicated.

- a. Use O Joint Substrates: Galvanized steel.

F. Single-Component Mildew-Resistant Neutral-Curing Silicone Sealant:

1. Type and Grade: S (single component) and NS (non-sag).
2. Class: 25.
3. Use Related to Exposure: NT (non-traffic).
4. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

- a. Use O Joint Substrates: Coated glass, color anodic aluminum, aluminum coated with a high-performance coating, galvanized steel and ceramic tile.

G. Multicomponent Pourable Urethane Sealant:

1. Type and Grade: M (multicomponent) and P (pourable).
2. Class: 25.
3. Use Related to Exposure: T (traffic).
4. Uses Related to Joint Substrates: M, A, and, as applicable to joint substrates indicated, O.

- a. Use O Joint Substrates: Ceramic tile.

H. Multicomponent Pourable Urethane Sealant:

1. Type and Grade: M (multicomponent) and P (pourable).
2. Class: 25.
3. Uses Related to Exposure: T (traffic) and NT (non-traffic).
4. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.

- a. Use O Joint Substrates: Color anodic aluminum and aluminum coated with a high-performance coating.

2.3 SOLVENT-RELEASE JOINT SEALANTS

- A. Butyl-Rubber-Based Solvent-Release Joint Sealant: Comply with ASTM C 1085.

- B. Pigmented Narrow-Joint Sealant: Manufacturer's standard, solvent-release-curing, pigmented, synthetic-rubber sealant complying with AAMA 803.3 and formulated for sealing joints 3/16 inch or smaller in width.

2.4 PREFORMED JOINT SEALANTS

- A. Preformed Silicone-Sealant System: Manufacturer's standard system consisting of precured low-modulus silicone extrusion, in sizes to fit joint widths indicated, combined with a neutral-curing silicone sealant for bonding extrusions to substrates.
- B. Preformed Foam Sealant: Manufacturer's standard preformed, pre-compressed, open-cell foam sealant that is manufactured from high-density urethane foam impregnated with a nondrying, water-repellent agent; is factory produced in pre-compressed sizes in roll or stick form to fit joint widths indicated; is coated on one side with a pressure-sensitive adhesive and covered with protective wrapping; develops a watertight and airtight seal when compressed to the degree specified by manufacturer; and complies with the following:
 - 1. Properties: Permanently elastic, mildew resistant, non-migratory, non-staining, and compatible with joint substrates and other joint sealants.
 - a. Density: Manufacturer's standard.

2.5 JOINT-SEALANT BACKING

- A. General: Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Elastomeric Tubing Sealant Backings: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, and capable of remaining resilient at temperatures down to minus 26 deg F. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and to otherwise contribute to optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.
 - 4. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates, where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 1. Do not leave gaps between ends of sealant backings.
 - 2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - 1. Place sealants so they directly contact and fully wet joint substrates.
 - 2. Completely fill recesses in each joint configuration.
 - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:
 - 1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
 - 2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
 - 3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
 - 4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.
- G. Installation of Preformed Foam Sealants: Install each length of sealant immediately after removing protective wrapping, taking care not to pull or stretch material, producing seal continuity at ends, turns, and intersections of joints. For applications at low ambient

temperatures where expansion of sealant requires acceleration to produce seal, apply heat to sealant in compliance with sealant manufacturer's written instructions.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Standard hollow-metal steel doors and frames.
 - 2. Custom hollow-metal steel doors and frames.
 - 3. Glazing for vision lites.
- B. All work under this section shall be in compliance with other trades and sections of this specification.

1.3 DEPARTMENT OF DEFENSE REQUIREMENT

- A. All exterior doors and windows, to include, but not limited to frames, glazing, anchoring, etc. must comply with the following regulations(s):
 - 1. Unified Facilities Criteria (UFC) 4-010-01 and (UFC) 4-020-01: DoD Minimum Antiterrorism Standards for Buildings

1.4 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.
- C. Custom Hollow Metal Work: Hollow metal work fabricated according to ANSI/NAAMM-HMMA 861.

1.5 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS’, attached at the end of the Specifications.

- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Testing Agency Qualifications: An independent agency qualified according to ASTM E 329 for testing indicated, as documented according to ASTM E 548.
- C. Source Limitations: Obtain standard steel doors and frames through one source from a single manufacturer.
- D. Fire-Rated Door Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated.
 - 1. Test Pressure: Test at atmospheric (neutral) pressure according to NFPA 252 or UL 10B.
 - 2. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies provide certification by a testing agency acceptable to authorities having jurisdiction that doors comply with standard construction requirements for tested and labeled fire-protection-rated door assemblies except for size.
 - 3. Temperature-Rise Rating: At exit enclosures, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure.
- E. Glazing:
 - 1. Glazing standards: FGMA Glazing Manual and Sealant Manual.
 - 2. Fire Protective Rated Glass: Each lite shall bear permanent, non-removable label of UL certifying it for use in tested and rated fire protective assemblies.
 - 3. Fire Protective Glazing Products for Door Assemblies: Products identical to those tested per ASTM E2074-00 and UL 10B, labeled and listed by UL.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store doors and frames under cover at Project site. Place units in a vertical position with heads up, spaced by blocking, on minimum 4-inch- high wood blocking. Avoid using non-vented plastic or canvas shelters that could create a humidity chamber.

1. If wrappers on doors become wet, remove cartons immediately. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.8 PROJECT CONDITIONS

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

1.9 COORDINATION

- A. Coordinate installation of anchorages for standard steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Ceco Door Products; an ASSA ABLOY Group Company.
 2. Fleming Door Products Ltd.; an ASSA ABLOY Group Company.
 3. Kewanee Corporation (The).
 4. Steelcraft; an Ingersoll-Rand Company.
 5. Or "Approved Equal."

2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 zinc-iron-alloy (galvannealed) coating designation.
- D. Electrolytic Zinc-Coated Steel Sheet: ASTM A 591/A 591M, Commercial Steel (CS), Class B coating; mill phosphatized.

- E. Supports and Anchors: After fabricating, galvanize units to be built into exterior walls according to ASTM A 153/A 153M, Class B.
- F. Inserts, Bolts, and Fasteners: Provide items to be built into exterior walls, hot-dip galvanized according to ASTM A 153/A 153M.
- G. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching standard steel door frames of type indicated.
- H. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool with 6- to 12-lb/cu. ft. density; with maximum flame-spread and smoke-developed indexes of 25 and 50 respectively; passing ASTM E 136 for combustion characteristics.
- I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type non-corrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.3 STANDARD HOLLOW METAL DOORS

- A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.
 - 1. Design: Flush panel.
 - 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polyurethane, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.
 - a. Fire Door Core: As required to provide fire-protection ratings indicated.
 - b. Thermal-Rated (Insulated) Doors: Where indicated, provide doors fabricated with thermal-resistance value (R-value) of not less than 6.0 deg F x h x sq. ft. /Btu when tested according to ASTM C 1363.
 - 1) Locations: Exterior doors.
 - 3. Vertical Edges for Single-Acting Doors: Beveled edge.
 - a. Beveled Edge: 1/8 inch in 2 inches.
 - 4. Vertical Edges for Double-Acting Doors: Round vertical edges with 2-1/8-inch radius.
 - 5. Top and Bottom Edges: Closed with flush or inverted 0.042-inch-thick end closures or channels of same material as face sheets.
 - 6. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Hardware Reinforcement: Fabricate reinforcement plates from same material as door face sheets to comply with the following minimum sizes:
 - 1. Hinges: Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.

2. Pivots: Minimum 0.167 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 3. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
 4. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.
- C. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.4 CUSTOM HOLLOW METAL DOORS

- A. General: Provide doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces, unless otherwise indicated. Comply with ANSI A250.8.
1. Design: Flush panel, Dutch door (with shelf)
 2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polyurethane, or vertical steel-stiffener core that produces doors complying with ANSI A250.8.
 3. Vertical Edges for Single-Acting Doors: Beveled edge.
 - a. Beveled Edge: 1/8 inch in 2 inches.
 4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick end closures or channels of same material as face sheets.
 5. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."
- B. Hardware Reinforcement: Fabricate reinforcement plates from same material as door face sheets to comply with the following minimum sizes:
1. Hinges: 4 Total, 2 per leaf.
 - a. Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 2. Pivots: Minimum 0.167 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 3. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
 4. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.
- C. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.5 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated from metallic-coated steel sheet.
1. Fabricate frames with mitered or coped and welded face corners and seamless face joints.
 2. Frames for Level 2 Steel Doors: 0.053-inch- thick steel sheet, unless otherwise indicated.

- C. Interior Frames: Fabricated from cold-rolled steel sheet, unless otherwise indicated to comply with exterior frame requirements.
 - 1. Fabricate frames with mitered or coped and welded face corners and seamless face joints, unless otherwise indicated.
 - 2. Fabricate knocked-down frames with mitered or coped corners, for field assembly.
 - 3. Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.
 - 4. Frames for Wood Doors: 0.053-inch- thick steel sheet.
- D. Hardware Reinforcement: Fabricate reinforcement plates from same material as frames to comply with the following minimum sizes:
 - 1. Hinges: Minimum 0.123 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 - 2. Pivots: Minimum 0.167 inch thick by 1-1/2 inches wide by 6 inches longer than hinge, secured by not less than 6 spot welds.
 - 3. Lock Face, Flush Bolts, Closers, and Concealed Holders: Minimum 0.067 inch thick.
 - 4. All Other Surface-Mounted Hardware: Minimum 0.067 inch thick.
- E. Supports and Anchors: Fabricated from electrolytic zinc-coated or metallic-coated steel sheet.
- F. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 - 3. Compression Type for Slip-on Frames: Adjustable compression anchors.
- G. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
 - 1. Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
- H. Fabricate concealed stiffeners and hardware reinforcement from either cold- or hot-rolled steel sheet.

2.6 STOPS AND MOLDINGS

- A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, same material as door face sheet.
- B. Fixed Frame Moldings: Formed integral with standard steel frames, minimum 5/8 inch high, unless otherwise indicated.
- C. Astragals:
 - 1. Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated.

2. Provide astragal weather strips at all exterior double doors.

2.7 FABRICATION

- A. General: Fabricate standard steel doors and frames to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Hollow Metal Doors:
 1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.
 2. Glazed Lites: Factory cut openings in doors.
 3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated.
- C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
 1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners, unless otherwise indicated.
 3. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 4. Jamb Anchors: Provide number and spacing of anchors as follows:
 - a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches in height.
 - 2) Three anchors per jamb from 60 to 90 inches in height.
 - 3) Four anchors per jamb from 90 to 120 inches in height.
 - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof more than 120 inches in height.
 - b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches in height.
 - 2) Four anchors per jamb from 60 to 90 inches in height.
 - 3) Five anchors per jamb from 90 to 96 inches in height.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof more than 96 inches in height.
 - 5) Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
 - c. Compression Type: Not less than two anchors in each jamb.

5. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Provide plastic plugs to keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

- D. Hardware Preparation: Factory prepare standard steel doors and frames to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."
 1. Reinforce doors and frames to receive non-templated mortised and surface-mounted door hardware.
 2. Comply with applicable requirements in ANSI A250.6 and ANSI/DHI A115 Series specifications for door and frame preparation for hardware. Locate hardware as indicated on Shop Drawings or, if not indicated, according to ANSI A250.8.

- E. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 3. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.8 STEEL FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 1. Finish standard steel door and frames after assembly.

- B. Metallic-Coated Steel Surface Preparation: Clean surfaces with non-petroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
 1. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.

- C. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning"; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, "Power Tool Cleaning," or SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

- D. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied finish paint system indicated; and providing a sound foundation for field-applied topcoats despite prolonged exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel doors and frames.
 1. Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.
 2. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
 3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory.
- B. Prior to installation and with installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive non-templated mortised and surface-mounted door hardware.

3.3 INSTALLATION

- A. General: Provide doors and frames of sizes, thicknesses, and designs indicated. Install standard steel doors and frames plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Standard Hollow Metal Frames: Install standard steel frames for doors and other openings, of size and profile indicated. Comply with SDI 105.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-protection-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections due to shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install door silencers in frames before grouting.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - f. Apply bituminous coating to backs of frames that are filled with mortar, grout, and plaster containing antifreeze agents.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor and secure with post installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar as specified in Division 4 Section "Unit Masonry Assemblies."
 5. In-Place Gypsum Board Partitions: Secure frames in place with post installed expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 6. Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Standard Hollow Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
1. Non-Fire-Rated Standard Hollow Metal Doors:
 - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3.4 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including standard steel doors or frames that are warped, bowed, or otherwise unacceptable.
- B. Clean grout and other bonding material off standard steel doors and frames immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- D. Galvannealed Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

SECTION 083323

OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. Section includes:
 - 1. Insulated service doors.
- B. Related Section:
 - 1. Division 05 Section "Metal Fabrications" for miscellaneous steel supports.
 - 2. Division 08 Section “Finish Hardware” key cylinders for locks.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance, Exterior Doors: Exterior overhead coiling doors shall withstand the wind loads, the effects of gravity loads, and loads and stresses within limits and under conditions indicated according to SEI/ASCE 7.
 - 1. Wind Loads: Uniform pressure (velocity pressure) of 20 lbf/sq. ft., acting inward and outward.
 - a. Basic Wind Speed: 90 mph.
 - b. Exposure Category: C

1.4 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS’, attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.
- B. Single-Source Responsibility: Provide doors, guides, motors, and related primary components from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.
- C. Pre-Installation Conference: Schedule and convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

PART 2 - PRODUCTS

2.1 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtains: Fabricate overhead coiling-door curtain of interlocking metal slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of thickness and mechanical properties recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
 - 1. Insulation: Fill slats for insulated doors with manufacturer's standard thermal insulation complying with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely within slat faces.
 - 2. Metal Interior Curtain-Slat Facing: Match metal of exterior curtain-slat face.
- B. Bottom Bar for Service Doors: Consisting of two angles, each not less than 1-1/2 by 1-1/2 by 1/8 inch thick; fabricated from metal to match curtain slats and finish.
- C. Astragal for Interior Doors: Equip each door bottom bar with a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene as a cushion bumper.
- D. Curtain Jamb Guides: Manufacturer's standard angles or channels and angles of same material and finish as curtain slats unless otherwise indicated, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain.

2.2 HOOD

- A. General: Form sheet metal hood to entirely enclose coiled curtain and operating mechanism at opening head. Contour to fit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Form closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting that projects beyond wall face. Equip hood with intermediate support brackets as required to prevent sagging.
 - 1. Include automatic drop baffle on fire-rated doors to guard against passage of smoke or flame.

2.3 LOCKING DEVICES

- A. Slide Bolt: Fabricate with side-locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.
- B. Locking Device Assembly: Fabricate with cylinder lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bars to engage through slots in tracks.
 - 1. Lock Cylinders: Provide cylinders standard with manufacturer and keyed to building keying system.
 - 2. Keys: Provide Three for each cylinder.
- C. Chain Lock Keeper: Suitable for padlock.
- D. Safety Interlock Switch: Equip power-operated doors with safety interlock switch to disengage power supply when door is locked.

2.4 CURTAIN ACCESSORIES

- A. Smoke Seals: Equip each fire-rated door with smoke-seal perimeter gaskets for smoke and draft control as required for door listing and labeling by a qualified testing agency.
- B. Weatherseals: Equip each exterior door with weather-stripping gaskets fitted to entire perimeter of door for a weathertight installation, unless otherwise indicated.
 - 1. At doorhead, use 1/8-inch-thick, replaceable, continuous sheet secure to inside of hood.
 - 2. At door jambs, use replaceable, adjustable, continuous, flexible, 1/8-inch-thick seals of flexible vinyl, rubber, or neoprene.
- C. Push/Pull Handles: Equip each push-up-operated or emergency-operated door with lifting handles on each side of door, finished to match door. Provide pull-down straps or pole hooks for doors more than 84 inches high.

2.5 COUNTERBALANCING MECHANISM

- A. General: Counterbalance doors by means of manufacturer's standard mechanism with an adjustable-tension, steel helical torsion spring mounted around a steel shaft and contained in a spring barrel connected to top of curtain with barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.

- B. Brackets: Manufacturer's standard mounting brackets of either cast iron or cold-rolled steel plate.

2.6 ELECTRIC DOOR OPERATORS

- A. General: Electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operation-cycles requirement specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
 - 1. Comply with NFPA 70.
 - 2. Provide control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24 V, ac or dc.
- B. Usage Classification: Electric operator and components capable of operating for not less than number of cycles per hour indicated for each door.
- C. Electric Motors:
 - 1. Electrical Characteristics:
 - a. Phase: Three phase.
 - b. Volts: 208V.
 - c. Hertz: 60.
 - 2. Motor Type and Controller: Reversible motor and controller (disconnect switch) for motor exposure indicated.
 - 3. Motor Size: Minimum size as indicated. If not indicated, large enough to start, accelerate, and operate door in either direction from any position, at a speed not less than 8 in./sec. and not more than 12 in./sec. without exceeding nameplate ratings or service factor.
 - 4. Operating Controls, Controllers (Disconnect Switches), Wiring Devices, and Wiring: Manufacturer's standard unless otherwise indicated.
- D. Obstruction Detection Device: Equip motorized door with indicated external automatic safety sensor capable of protecting full width of door opening. For non-fire-rated doors, activation of device immediately stops and reverses downward door travel.
 - 1. Sensor Edge: Automatic safety sensor edge, located within astragal or weather stripping mounted to bottom bar. Contact with sensor activates device. Connect to control circuit using manufacturer's standard take-up reel or self-coiling cable. Provide self-monitoring capability designed to interface with door operator control circuit to detect damage to or disconnection of sensing device.
- E. Emergency Manual Operation: Equip each electrically powered door with capability for emergency manual operation. Design manual mechanism so required force for door operation does not exceed 25 lbf .
- F. Emergency Operation Disconnect Device: Equip operator with hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount

mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.

- G. Motor Removal: Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

2.7 DOOR ASSEMBLY

- A. Insulated Service Door: Overhead coiling door formed with curtain of interlocking metal slats.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cookson Company.
 - b. Cornell Iron Works, Inc.
 - c. Overhead Door Corporation.
 - d. Raynor.
 - e. Or "Approved Equal."
- B. Operation Cycles: Not less than 100,000.
- C. Curtain R-Value: Minimum of R-10.9.
- D. Door Curtain Material: Galvanized steel.
- E. Door Curtain Slats: Flat profile slats of 2-5/8-inch center-to-center height.
- F. Curtain Jamb Guides: Galvanized steel with exposed finish matching curtain slats. Provide continuous integral wear strips to prevent metal-to-metal contact and to minimize operational noise.
- G. Hood: Match curtain material and finish.
 - 1. Shape: Round.
 - 2. Mounting: Face of wall.
- H. Integral Frame, Hood, and Fascia for Counter Door: Galvanized steel.
 - 1. Mounting: Face of wall.
- I. Locking Devices: Equip door with locking device assembly.
 - 1. Locking Device Assembly: Cremone type, both jamb sides locking bars, operable from inside with thumb turn.
- J. Electric Door Operator:
 - 1. Usage Classification: Heavy duty, 60 to 90 cycles per hour.
 - 2. Motor Exposure: Interior.
 - 3. Emergency Manual Operation: Chain type.
 - 4. Obstruction-Detection Device: Automatic electric sensor edge on bottom bar; self-monitoring type.

5. Remote-Control Station: Interior.

K. Door Finish:

1. Baked-Enamel or Powder-Coated Finish: Color as selected by Government Design Professional from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install overhead coiling doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; according to manufacturer's written instructions and as specified.
- B. Fire-Rated Doors: Install according to NFPA 80.
- C. Smoke-Control Doors: Install according to NFPA 80 and NFPA 105.
- D. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion. Lubricate bearings and sliding parts as recommended by manufacturer. Adjust seals to provide weathertight fit around entire perimeter.

3.2 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain overhead coiling doors.

END OF SECTION

SECTION 087111

DOOR HARDWARE

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes the following:
1. Commercial door hardware for the following:
 - a. Swinging doors.
 - b. Other doors to the extent indicated.
 2. Cylinders for doors specified in other Sections.
- B. Related Sections include the following:
1. Division 8 Section “Hollow Metal Doors and Frames.”
 2. Division 8 Section “Overhead Coiling Doors.”
 3. Division 8 Section “Sectional Doors.”

1.3 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS’, attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.4 QUALITY ASSURANCE

- A. **Installer Qualifications:** An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. **Supplier Qualifications:** Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during

the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.
 - C. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
 - D. Regulatory Requirements: Comply with provisions of the following:
 1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," as follows:
 - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
 2. NFPA 101: Comply with the following for means of egress doors:
 - a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Door Closers: Not more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.
 - c. Thresholds: Not more than 1/2 inch high.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
 - B. Tag each item or package separately with identification related to the final Door Hardware Schedule and include basic installation instructions with each item or package.
 - C. Deliver keys to Government Representative or Contracting Officer.
- 1.6 WARRANTY
- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of operators and door hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. Warranty Period: Three (3) years from date of Substantial Completion, unless otherwise indicated.
- D. Warranty Period for Manual Closers: Ten (10) years from date of Substantial Completion.

1.7 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door as scheduled on sheet A.5.1 to comply with requirements in this Section.
 - 1. Door Hardware Sets: Requirements for quantity, item, design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule. Products are identified by descriptive titles corresponding to requirements specified in Part 2.
 - 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

2.2 HINGES AND PIVOTS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Hinges:
 - a. Stanley Commercial Hardware; Div. of The Stanley Works.
 - 2. Continuous Geared Hinges:
 - a. McKinney Products Company; Div. of ESSEX Industries, Inc.
- B. Standards: Comply with the following:

1. Butts and Hinges: BHMA A156.1.
2. Template Hinge Dimensions: BHMA A156.7.

C. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches.
2. Three Hinges: For doors with heights 61 to 90 inches.
3. Four Hinges: For doors with heights 91 to 120 inches.
4. Four Hinges: For dutch doors, 2 hinges per leaf.
5. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

D. Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

Maximum Door Size (inches)	Hinge Height (inches)	Metal Thickness (inches)	
		Standard Weight	Heavy Weight
32 by 84 by 1-3/8	3-1/2	0.123	-
36 by 84 by 1-3/8	4	0.130	-
36 by 84 by 1-3/4	4-1/2	0.134	0.180
42 by 90 by 1-3/4	4-1/2	0.134	0.180
48 by 120 by 1-3/4	5	0.146	0.190

E. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

F. Hinge Applications: Unless otherwise indicated, provide the following:

1. Entrance Doors: Heavy-weight hinges.
2. Doors with Closers: Antifriction-bearing hinges.
3. Interior Doors: Standard-weight hinges.

G. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior Hinges: Stainless steel, with stainless-steel pin.
2. Interior Hinges: Stainless steel, with stainless-steel pin.
3. Hinges for Fire-Rated Assemblies: Stainless steel, with stainless-steel pin.

H. Hinge Options: Comply with the following:

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - a. Outswinging exterior doors.
 - b. Outswinging corridor doors with locks.

2. Corners: Square.
3. Reverse Safety Stud: Metal stud extension on back of each leaf that engages hole in reinforcing plate.
4. Safety Stud: Metal stud extension on exposed side of one leaf that engages hole in opposite leaf when door is closed.

I. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Screws: Phillips flat-head screws; machine screws (drilled and tapped holes) for metal doors. Finish screw heads to match surface of hinges.

2.3 HINGES

A. Antifriction-Bearing, Full-Mortise (Butt) Hinges: Standard weight; BHMA Grade 2, with 2 ball bearings; button tips; non-rising removable pins; and base metal as follows:

1. Base Metal: Stainless steel.

B. Plain-Bearing, Standard-Weight, Full-Mortise (Butt) Hinges: BHMA Grade 3, button tips, non-rising removable pins, and base metal as follows:

1. Base Metal: Stainless steel.

2.4 LOCKS AND LATCHES, GENERAL

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Mechanical Locks and Latches:
 - a. Lock Cores shall be Best Access Systems. Best Access Systems has been approved by DGS as a proprietary item. No other manufacturers/items will be accepted.

B. Standards: Comply with the following:

1. Bored Locks and Latches: BHMA A156.2.
2. Mortise Locks and Latches: BHMA A156.13.
3. Interconnected Locks and Latches: BHMA A156.12.
4. Auxiliary Locks: BHMA A156.5.
5. Push-Button Combination Locks: BHMA A156.2.

C. Bored Locks: BHMA Grade 2; Series 4000.

D. Mortise Locks: Stamped steel case with steel or brass parts; BHMA Grade 2; Series 1000.

E. Interconnected Locks: BHMA Grade 1, unless Grade 2 is indicated; Series 5000.

F. Auxiliary Locks: BHMA Grade 1, unless Grade 2 is indicated.

- G. Push-Button Combination Locks: BHMA Grade 1 for cylindrical locks, Grade 2 for mortise locks.
- H. Certified Products: Provide door hardware listed in the following BHMA directories:
 - 1. Mechanical Locks and Latches: BHMA's "Directory of Certified Locks & Latches."
- I. Lock Trim: Comply with the following:
 - 1. Lever: Wrought, forged, or cast.
 - 2. Knob: Wrought, forged, or cast.
 - 3. Escutcheon (Rose): Wrought, forged, or cast.
 - 4. Dummy Trim: Match lever lock trim and escutcheons.
 - 5. Lockset Designs: Provide lockset design designated below or, if sets are provided by another manufacturer, provide designs that match those designated:
 - a. Bored Locks: Best Access Systems.
- J. Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:
 - 1. Bored Locks: BHMA A156.2.
 - 2. Mortise Locks: BHMA A156.13.
 - 3. Interconnected Locks: BHMA A156.12.
- K. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
 - 1. Bored Locks: Minimum 1/2-inch latchbolt throw.
 - 2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
 - 3. Deadbolts: Minimum 1-inch bolt throw.
- L. Rabbeted Doors: Provide special rabbeted front and strike on locksets for rabbeted meeting stiles.
- M. Backset: 2-3/4 inches, unless otherwise indicated.

2.5 MECHANICAL LOCKS AND LATCHES

- A. Bored Auxiliary Locks: Comply with the following:
 - 1. Material: Stainless steel.
 - 2. Deadlocks: Deadbolt operated by key either side.

2.6 DOOR BOLTS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Flush Bolts: Best Access Systems.

- B. Standards: Comply with the following:
 - 1. Automatic and Self-Latching Flush Bolts: BHMA A156.3.
 - 2. Manual Flush Bolts: BHMA A156.16.
- C. Flush Bolts: BHMA Grade 2, designed for mortising into door edge.
- D. Bolt Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
 - 1. Mortise Flush Bolts: Minimum 3/4-inch throw.

2.7 DOOR BOLTS

- A. Automatic Flush Bolts: Fabricated from steel and brass components, with spring-activated bolts that automatically retract when active leaf is opened and that automatically engage when active door depresses bolt trigger. Provide brass or stainless-steel cover plate, top and bottom strikes, guides, guide supports, wear plates, and shims.
- B. Self-Latching Flush Bolts: Fabricated from steel and brass components, with spring-activated bolts that automatically engage when active door depresses trigger. Bolts are manually retracted by a slide in the bolt face. Provide brass or stainless-steel cover plate, top and bottom strikes, guides, guide supports, wear plates, and shims.

2.8 SURFACE BOLTS

- A. Surface Bolts: BHMA A156.16.
- B. Half-Round Surface Bolts: Grade 2, 6-inch polished-brass or burnished-steel, half-round rod and knob; minimum 7/8-inch throw; with universal strike.

2.9 EXIT DEVICES, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc.
- B. Standard: BHMA A156.3.
 - 1. BHMA Grade: Grade 1, unless Grade 2 is indicated.
- C. Certified Products: Provide exit devices listed in BHMA's "Directory of Certified Exit Devices."
- D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- E. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

- 1. Operation: Rigid.
- F. Outside Trim: Knob with cylinder; material and finish to match locksets, unless otherwise indicated.
 - 1. Match design for locksets and latch sets, unless otherwise indicated.
- G. Through Bolts: For exit devices and trim on metal doors.

2.10 EXIT DEVICES AND AUXILIARY ITEMS

- A. Mortise Exit Devices: Comply with the following:
 - 1. Type: Type 3.
 - 2. Actuating Bar: Push pad.
 - 3. Material: Stainless steel.

2.11 CYLINDERS AND KEYING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cylinders: Same manufacturer as for locks and latches.
- B. Standards: Comply with the following:
 - 1. Cylinders: BHMA A156.5.
- C. Cylinder Grade: BHMA Grade 2.
- D. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
 - 1. Number of Pins: Seven (7).
 - 2. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
 - 3. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 4. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 - a. High-Security Grade: BHMA Grade 1A, listed and labeled as complying with pick- and drill-resistant testing requirements of UL 437 (Suffix A).
- E. Permanent Cores: WA Premium Heavy Key; finish face to match lockset; complying with the following:
 - 1. Best Access Systems: DMVA STANDARD, NO SUBSTITUTIONS.
 - 2. Standard Core: WA Premium Heavy Key (PT# ICP7WA1-626)
- F. Construction Keying: Comply with the following:

1. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
 2. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 5 construction master keys.
 - a. Turn cores over to Government once all construction is complete.
- G. Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:
1. Master Key System: Cylinders are operated by a change key and a master key.
 2. Keyed Alike: Key all cylinders to the same change key.
 - a. Cylinders shall be master keyed.
- H. Keys: Provide nickel-silver keys complying with the following:
1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: Information to be furnished by Owner.
 2. Quantity: In addition to one extra blank key for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Five.
- I. Permanent Keying: Unless otherwise indicated, Government will be responsible for all permanent keying.

2.12 STRIKES

- A. Standards: Comply with the following:
1. Strikes for Bored Locks and Latches: BHMA A156.2.
 2. Strikes for Mortise Locks and Latches: BHMA A156.13.
 3. Strikes for Interconnected Locks and Latches: BHMA A156.12.
 4. Strikes for Auxiliary Deadlocks: BHMA A156.5.
- B. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.

2.13 OPERATING TRIM, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Stanley Commercial Hardware; Div. of The Stanley Works.
- B. Standard: Comply with BHMA A156.6.
- C. Materials: Fabricate from stainless steel, unless otherwise indicated.

2.14 OPERATING TRIM

- A. Flat Push Plates: 0.050 inch thick, 4 inches wide by 16 inches high; with square corners and beveled edges, secured with exposed screws.
- B. Single Push Bar: Horizontal bar, with minimum clearance of 1-1/2 inches from face of door, and as follows:
 - 1. Shape and Size: Minimum 3/8-by-1-1/4-inch flat bar.
 - 2. Mounting: Surface applied with concealed fasteners.

2.15 ACCESSORIES FOR PAIRS OF DOORS

- A. Coordinators: BHMA A156.3; consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release.
- B. Carry-Open Bars: BHMA A156.3; prevent the inactive leaf from opening before the active leaf; provide polished brass or bronze carry-open bars with strike plate for inactive leaves of pairs of doors unless automatic or self-latching bolts are used.
- C. Flat Overlapping Astragals: BHMA A156.22; flat stainless steel metal bar, surface mounted on face of door with screws; minimum 1/8 inch thick by 2 inches wide by full height of door.

2.16 CLOSERS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Surface-Mounted Closers:
- B. Standards: Comply with the following:
 - 1. Closers: BHMA A156.4.
- C. Surface Closers: BHMA Grade 2.
- D. Certified Products: Provide door closers listed in BHMA's "Directory of Certified Door Closers."

- E. Power-Assist Closers: As specified in Division 8 Section "Power Door Operators" for access doors for the disabled or where listed in the Door Hardware Schedule. Provide electrohydraulic, electromechanical, and pneumatic types as indicated.
- F. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

2.17 CLOSERS

- A. Modern-Type-with-Cover Surface Closers: Rack-and-pinion hydraulic type; with adjustable sweep and latch speeds controlled by key-operated valves; with forged-steel main arm; enclosed in cover indicated; complying with the following:
 - 1. Mounting: Hinge side.
 - 2. Type: Delayed action closing.
 - 3. Backcheck: Adjustable, effective between 60 and 85 degrees of door opening.
 - 4. Cover Material: Aluminum.
 - 5. Closing Power Adjustment: At least 35 percent more than minimum tested value.

2.18 PROTECTIVE TRIM UNITS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Metal Protective Trim Units:
 - a. Baldwin Hardware Corporation.
- B. Standard: Comply with BHMA A156.6.
- C. Materials: Fabricate protection plates from the following:
 - 1. Stainless Steel: 0.050 inch thick; beveled top and 2 sides.
- D. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine or self-tapping screws.
- E. Furnish protection plates sized 1-1/2 inches less than door width on push side and 1/2 inch less than door width on pull side, by height specified in schedule.

2.19 PROTECTIVE TRIM UNITS

- A. Kick Plates: 12 inches high by door width, with allowance for frame stops.

2.20 STOPS AND HOLDERS

- A. Stops and Bumpers: BHMA A156.16, Grade 1 unless Grade 2 is indicated.
 - 1. Provide floor stops for doors unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead holders.
- B. Dome-Type Floor Stop: Grade 1; with minimum 1-inch high bumper for door without threshold and 1-3/8-inch- high bumper for doors with threshold.
- C. Chain Door Stops (Exterior Doors): Heavy-duty compressions spring on both ends of chain and end brackets, thick gauge steel brackets, welded solid steel chains, weather and rip resistant vinyl cover.
 - 1. Comply with BHMA A156.16, Grade 1.
 - 2. Spring Diameter: 13/16"

2.21 DOOR GASKETING, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Door Gasketing:
 - a. Reese Enterprises, Inc.
- B. Standard: Comply with BHMA A156.22.
- C. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide non-corrosive fasteners for exterior applications and elsewhere as indicated.
 - 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- D. Air Leakage: Not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

2.22 DOOR GASKETING

- A. Adhesive-Backed Perimeter Gasketing: Gasket material applied to frame rabbet with self-adhesive.
 - 1. Gasket Material: Sponge neoprene.
- B. Door Shoe Sweep: Vinyl gasket material held in place by aluminum housing; mounted to bottom edge of door with screws.

1. U-shaped Door Shoe.
2. Vinyl 3-Fingered Seal.

2.23 THRESHOLDS, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Reese Enterprises, Inc.
- B. Standard: Comply with BHMA A156.21.

2.24 THRESHOLDS

- A. Plate Thresholds: Solid metal plate; and base metal as follows:
 1. Top Surface: Fluted with slip-resistant abrasive.
 2. Base Metal: Stainless steel.
 3. ADA approved.

2.25 MISCELLANEOUS DOOR HARDWARE, GENERAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Standard: Comply with the following:
 1. Auxiliary Hardware: BHMA A156.16.
 2. Auxiliary Hardware: BHMA Grade 2, unless otherwise indicated.

2.26 FABRICATION

- A. Manufacturer's Nameplate: Do not provide manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise approved by Architect.
 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Steel Machine or Wood Screws: For the following fire-rated applications:
 - a. Mortise hinges to doors.
 - b. Strike plates to frames.
 - c. Closers to doors and frames.
3. Steel Through Bolts: For the following fire-rated applications, unless door blocking is provided:
 - a. Closers to doors and frames.
4. Spacers or Sex Bolts: For through bolting of hollow metal doors.

2.27 FINISHES

- A. Standard: Comply with BHMA A156.18.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. BHMA Designations: Comply with base material and finish requirements indicated by the following:
 1. BHMA 600: Primed for painting, over steel base metal.
 2. BHMA 605: Bright brass, clear coated, over brass base metal.
 3. BHMA 606: Satin brass, clear coated, over brass base metal.
 4. BHMA 609: Satin brass, blackened, satin relieved, clear coated, over brass base metal.
 5. BHMA 611: Bright bronze, clear coated, over bronze base metal.
 6. BHMA 612: Satin bronze, clear coated, over bronze base metal.
 7. BHMA 613: Dark-oxidized satin bronze, oil rubbed, over bronze base metal.
 8. BHMA 618: Bright nickel plated, clear coated, over brass or bronze base metal.
 9. BHMA 619: Satin nickel plated, clear coated, over brass or bronze base metal.
 10. BHMA 622: Flat black coated, over brass or bronze base metal.
 11. BHMA 623: Light-oxidized statuary bronze, clear coated, over bronze base metal.
 12. BHMA 624: Dark-oxidized statuary bronze, clear coated, over bronze base metal.
 13. BHMA 625: Bright chromium plated over nickel, over brass or bronze base metal.
 14. BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.
 15. BHMA 627: Satin aluminum, clear coated, over aluminum base metal.
 16. BHMA 628: Satin aluminum, clear anodized, over aluminum base metal.

17. BHMA 629: Bright stainless steel, over stainless-steel base metal.
18. BHMA 630: Satin stainless steel, over stainless-steel base metal.
19. BHMA 651: Bright chromium plated over nickel, over steel base metal.
20. BHMA 652: Satin chromium plated over nickel, over steel base metal.
21. BHMA 689: Aluminum painted, over any base metal.
22. BHMA 690: Dark bronze painted, over any base metal.
23. BHMA 691: Light bronze painted, over any base metal.
24. BHMA 717: Bright aluminum, uncoated; aluminum base metal.
25. BHMA 718: Satin aluminum, uncoated; aluminum base metal.
26. BHMA 722: Dark-oxidized bronze, oil rubbed, over architectural bronze base metal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance of door hardware.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

3.3 FIELD QUALITY CONTROL

- A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
 1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- B. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall perform the following:
 - 1. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.
 - 2. Consult with and instruct Owner's personnel on recommended maintenance procedures.
 - 3. Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

END OF SECTION

SECTION 099113

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections "General Conditions of the Construction Contract," "Special Conditions," and "Division 1 – General Requirements" form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes surface preparation and the application of paint systems on the following exterior substrates:
 - 1. Steel.
 - 2. Hollow Metal Doors / Frames

1.3 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and 'SCHEDULE OF MATERIAL SUBMITTALS', attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.4 QUALITY ASSURANCE

- A. MPI Standards:
 - 1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
 - 2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1.7 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. M.A.B. Paints.
 - 2. Sherwin-Williams Company (The).
 - 3. Or "Approved Equal."

2.2 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As selected by Government Design Professional from manufacturer's full range.

2.3 METAL PRIMERS

- A. Alkyd Anticorrosive Metal Primer: MPI #79.
 - 1. VOC Content: E Range of E2.
- B. Quick-Drying Alkyd Metal Primer: MPI #76.
 - 1. VOC Content: E Range of E2.

2.4 EXTERIOR LATEX PAINTS

- A. Exterior Latex (Semigloss): MPI #11 (Gloss Level 5).
 - 1. VOC Content: E Range of E2.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Plaster: 12 percent.
 - 5. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION AND APPLICATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.3 EXTERIOR PAINTING SCHEDULE

A. Steel Substrates:

1. Quick-Drying Enamel System: MPI EXT 5.1A.
 - a. Prime Coat: Quick-drying alkyd metal primer.
 - b. Intermediate Coat: Quick-drying enamel matching topcoat.
 - c. Topcoat: Quick-drying enamel semigloss.
2. Alkyd System: MPI EXT 5.1D.
 - a. Prime Coat: Alkyd anticorrosive metal primer.
 - b. Intermediate Coat: Exterior alkyd enamel matching topcoat.
 - c. Topcoat: Exterior alkyd enamel semigloss.
3. Aluminum Paint System: MPI EXT 5.1K.
 - a. Prime Coat: Alkyd anticorrosive metal primer.
 - b. Intermediate Coat: Aluminum paint.
 - c. Topcoat: Aluminum paint.

END OF SECTION

SECTION 104416

FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Portable fire extinguishers and mounting brackets for fire extinguishers.

1.3 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS’, attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.4 QUALITY ASSURANCE

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
 - 1. Provide fire extinguishers approved, listed, and labeled by FMG.

1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PORTABLE FIRE EXTINGUISHERS

- A. General: Contractor shall provide a minimum of (3) three fire extinguishers, unless noted otherwise, of type, size, and capacity for each cabinet location indicated.
 1. Valves: Manufacturer's standard.
 2. Handles and Levers: Manufacturer's standard.
 3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
- B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 10 lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
- C. Wet-Chemical Type: UL-rated 2-A:1-B:C:K, 1.6-gal. (6-L) nominal capacity, with potassium acetate-based chemical in stainless-steel container; with pressure-indicating gage.

2.2 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked-enamel finish.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Located as indicated by Government Design Professional.
 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 1. Remove and replace damaged, defective, or undercharged units.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install fire-extinguishers and mounting brackets in locations as indicated on drawing A.1.1 and in compliance with requirements of authorities having jurisdiction.
 - 1. Mounting Brackets: 54 inches above finished floor to top of fire extinguisher.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION

SECTION 133419

METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, and “Special Conditions”, and “Division 1 - General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. Section Includes:
1. Structural-steel framing.
 2. Metal roof panels.
 3. Metal wall panels.
 4. Metal soffit panels.
 5. Thermal insulation.
 6. Accessories.

1.3 SCOPE OF WORK OUTLINE

- A. The work under this Section shall generally consist of, but necessarily be limited to, providing all labor, materials, devices, tools and equipment required for the following:
1. Furnishing & erecting a complete Pre-Engineered Metal Building System.

1.4 REFERENCES/ACRONYMS

- A. The following referenced material shall apply to this specification and have the same force and effect as if printed in full herein:

1. MBMA = Metal Building Manufactures Association
2. AISC = American Institute of Steel Construction
3. AISI = American Iron and Steel Institute
4. ASTM = American Society of Testing and Materials
5. AWS = American Welding Society

MBMA	Recommended Design Practices Manual
AISC	Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings, 1989 edition
AISI	Specification for the Design of Light Gage Cold-Formed Steel Structural

	Members, 1986 edition
ASTM A325	Standard Specification for Structural Bolts, Steel, Heat Treated, 120/150 ksi Minimum Tensile Strength
ASTM A500	Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A529	Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality
ASTM A572	Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A653	Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process
ASTM A924	Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process
ASTM A1011	Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
AWS D1.1	Standard Code for Welding in Building Construction

1.5 SUBMITTALS

- A. Make submissions in accordance with Division 1 Specifications and ‘SCHEDULE OF MATERIAL SUBMITTALS’, attached at the end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer and member of MBMA.
 - 1. AISC Certification for Category MB: An AISC-Certified Manufacturer that designs and produces metal building systems and components in an AISC-Certified Facility.
 - 2. The manufacturer of the Pre-Engineered Metal Building System shall have a minimum of 7 years experience in the design and manufacturing process of pre-engineered metal buildings.
 - 3. Engineering Responsibility: Design of the Pre-Engineered Metal Building primary and secondary structural framing system shall be certified and receive the seal of a Professional Engineer, currently licensed to practice Engineering in the Commonwealth of Pennsylvania, see PART B; paragraph 1.; c.; c.2.; this Section.
- B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

1. The erector of the Pre-Engineered Metal Building System shall have a minimum of 5 years experience in erection of the type of building system specified under this Section.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 2. AWS D1.3, "Structural Welding Code - Sheet Steel."
- D. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings," for design requirements and allowable stresses.
- E. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.
- F. All materials under this Section shall be new factory certified, first run material, seconds will not be permitted.
- G. Also see REMOVAL OF NON-COMPLIANT MATERIALS; this PART.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when weather conditions permit metal panels to be installed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements:
 1. Established Dimensions for Foundations: Comply with established dimensions on approved anchor-bolt plans, establishing foundation dimensions and proceeding with fabricating structural framing without field measurements. Coordinate anchor-bolt installation to ensure that actual anchorage dimensions correspond to established dimensions.
 2. Established Dimensions for Metal Panels: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating metal panels without field measurements, or allow for field trimming metal panels. Coordinate construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original unopened packaging and/or containers labeled with the manufacturer's name, brand name, installation instructions, storage conditions and lot numbers.
- B. Store and protect materials from damage and weather in accordance with manufacturer's instructions, except as specified otherwise.
 1. Verify storage area with Using Agency so as not to interfere with daily or monthly operations.

2. The Department shall accept absolutely no liability for any materials stored on site. It shall be the complete responsibility of the Contractor to provide whatever means necessary to properly secure any and all stored materials.
- C. Store all building parts in such a manner and location as to eliminate any exposure to mud.
- D. Any materials damaged either during shipping or storage at the site shall be replaced at Contractor's expense.

1.9 REMOVAL OF NON-COMPLIANT MATERIALS

- A. Any material found not to be in compliance with the requirements of this Section, through testing and/or other means, whether installed individually and/or as a part of a system or not, shall be immediately removed from the job site and replaced with compliant materials at no additional cost to the Contract.

1.10 WARRANTY

- A. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 1. Finish Warranty Period: Minimum 20 years from date of Substantial Completion.
- B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.
 1. Warranty Period: Minimum 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Alliance Steel, Inc.
 2. American Steel Building Co., Inc.
 3. Butler Manufacturing Company; a BlueScope Steel company.
 4. Nucor Building Systems.
 5. Olympia Steel Building Systems.
 6. Or "Approved Equal."

2.2 METAL BUILDING SYSTEM PERFORMANCE

- A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
1. The building manufacturer shall be responsible for preparation of all erection drawings and details.
- B. Structural Performance: Metal building systems shall be designed according to procedures in MBMA's "Metal Building Systems Manual."
1. Design Loads: As required by MBMA's "Metal Building Systems Manual." ASCE/SEI 7.
 2. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:
 - a. Purlins and Rafters: Vertical deflection of 1/180 of the span.
 - b. Girts: Horizontal deflection of 1/180 of the span.
 - c. Metal Roof Panels: Vertical deflection of 1/180 of the span.
 - d. Metal Wall Panels: Horizontal deflection of 1/180 of the span.
 - e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
 3. The most critical of the following load combinations shall be used in the design of the structural frame.
 - a. $DL + LL$; $DL + WL$; $DL + \frac{1}{2} LL + WL$ or $DL + \frac{1}{2} WL + LL$ with $LL = 30$ psf (roof) and $WL = 25$ psf.
 - b. Design of the primary and secondary structural system shall be certified, to meet the minimum load parameters that are stated in this paragraph, by a Professional Engineer licensed by the Commonwealth of Pennsylvania.
 4. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:
 - a. Lateral Drift: Maximum of 1/200 of the building height.
 5. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E 1592.
- C. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- D. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

- E. Air Infiltration for Metal Roof Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) of roof area when tested according to ASTM E 1680 at negative test-pressure difference of 1.57 lbf/sq. ft. (75 Pa).
- F. Air Infiltration for Metal Wall Panels: Air leakage through assembly of not more than 0.06 cfm/sq. ft. (0.3 L/s per sq. m) of wall area when tested according to ASTM E 283 at static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa).
- G. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E 1646 at test-pressure difference of 2.86 lbf/sq. ft. (137 Pa).
- H. Water Penetration for Metal Wall Panels: No water penetration when tested according to ASTM E 331 at a wind-load design pressure of not less than 2.86 lbf/sq. ft. (137 Pa).
- I. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for Class 60.
- J. Thermal Performance: Provided insulated metal panel assemblies with the following minimum R-values for opaque elements when tested according to ASTM C1363 or ASTM C 518:
 - 1. Metal Roof Panel Assemblies:
 - a. R-value: R-38
 - 2. Metal Wall Panel Assemblies:
 - a. R-value: R-19

2.3 STRUCTURAL-STEEL FRAMING, GENERAL

- A. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake, and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.
 - 1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly.
 - 2. Primary-Frame Type:
 - a. Rigid Clear Span: Solid-member, structural-framing system without interior columns
 - 3. Frame Configuration: Gable and One-directional sloped.
 - 4. Exterior Column Type: Tapered.
 - 5. Rafter Type: Tapered.
- B. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly.
- C. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either

cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating.

- D. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide zinc-plated or hot-dip galvanized bolts for structural-framing components that are galvanized.
- E. Recycled Content of Steel Products: Provide steel products with an average recycled content so postconsumer recycled content plus one-half of preconsumer recycled content is not less than 25 percent.
- F. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

2.4 METAL ROOF PANELS

- A. Vertical-Rib, Standing-Seam Metal Roof Panels <Drawing A.2.1>: Formed with ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.
 - 1. Material: Zinc-coated (galvanized) steel sheet, 24 ga.
 - a. Exterior Finish: Two-coat fluoropolymer.
 - 1) PVDF (polyvinylidene fluoride) coating system.
 - b. Interior Finish: Manufacturer's standard interior finish.
 - c. Color: As selected by Design Professional from manufacturer's full range.
 - d. Manufacturers standard written 20 year warranty that coatings shall not blister, peel, crack, chip, experience material rust through, fade in excess of 5 Hunter ΔE color difference units per ASTM Method D-2244-89 or chalk in excess of number eight rating per ASTM D-4214-89, Method D.
 - 2. Clips: Manufacturer's standard, floating to accommodate thermal movement; fabricated from zinc-coated (galvanized) steel sheet.
 - 3. Joint Type: Panels snapped together.
 - 4. Joint Type: Mechanically seamed, folded according to manufacturer's standard.
 - 5. Panel Coverage: 24 inches.
 - 6. Panel Height: 2 - 2 ½ inches.
 - 7. Uplift Rating: UL 30.

2.5 METAL WALL PANELS

- A. Tapered-Rib-Profile, Exposed-Fastener Metal Wall Panels <A.2.1>: Formed with raised, trapezoidal major ribs and two additional minor 'V' corrugations in between major ribs; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.
 - 1. Material: Zinc-coated (galvanized) steel sheet, 26 ga.
 - a. Exterior Finish: Two-coat fluoropolymer.

- b. Color: As selected by Design Professional from manufacturer's full range.
- 2. Joint Type: Continuous bead of sealant entire length of panel.
- 3. Major-Rib Spacing: 12 inches o.c.
- 4. Panel Coverage: 36 inches.
- 5. Panel Height: 1.5 inches.

2.6 METAL LINER PANELS

- A. Flush-Profile, Metal Liner Panels: Solid panels formed with vertical panel edges and flat pan spaced between panel edges; with flush joint between panels; designed for interior side of metal wall panel assemblies and installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps.
 - 1. Material: Zinc-coated (galvanized) steel sheet, 28 ga.
 - a. Finish: Polyester.
 - b. Color: As selected by Design Professional from manufacturer's full range.
 - 2. Panel Coverage: 36 inches.
 - 3. Panel Height: 1.25 inches.

2.7 METAL SOFFIT PANELS

- A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels: Match profile and material of metal roof panels.
 - 1. Finish: Match finish and color of metal roof panels.

2.8 THERMAL INSULATION

- A. Faced Metal Building Insulation: ASTM C 991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.
- B. Unfaced Metal Building Insulation: ASTM C 991, Type I, or NAIMA 202, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch- wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.
 - 1. Vapor-Retarder Facing: ASTM C 1136, with permeance not greater than 0.02 perm (1.15 ng/Pa x s x sq. m) when tested according to ASTM E 96/E 96M, Desiccant Method.

2.9 ACCESSORIES

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.
 - 1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
- C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.
- D. Flashing and Trim: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match adjacent metal panels.
- E. Gutters: Formed from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
 - 1. Gutter Supports: Fabricated from same material and finish as gutters.
 - 2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.
- F. Downspouts: Formed from 0.022-inch nominal-thickness, zinc-coated (galvanized) steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- long sections, complete with formed elbows and offsets.
 - 1. Mounting Straps: Fabricated from same material and finish as gutters.
- G. Snow Guards: Prefabricated, non-corrosive units designed to be installed with minimal to no penetrating of the roof panel.
 - 1. Stainless Steel, Seam Clamped, Horizontal Rod(s) or Bar w/ Cleat or Plate to prevent movement of snow and ice beneath guard.
 - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Metal Roof Innovations, Ltd.: SnoRail and SnoFence
 - 2) SNO GEM: Snow Barricade System

3) Or "Approved Equal."

H. Roof Ventilators: Gravity type, complete with hardware, flashing, closures, and fittings.

1. Continuous or Sectional-Ridge Type: Factory-engineered and -fabricated, continuous unit; fabricated from 0.022-inch nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match metal roof panels. Fabricated in minimum 10-foot- long sections. Provide throat size and total length indicated, complete with side baffles, ventilator assembly, end caps, splice plates, and reinforcing diaphragms.
 - a. Bird Screening: Galvanized steel or aluminum.
 - b. Dampers: Manually operated, spring-loaded, vertically rising type; chain and worm gear operator; with pull chain of length required to reach within 36 inches of floor.
 - c. Throat Size: 9 or 12 inches, as standard with manufacturer, and as required to comply with ventilation requirements.

I. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

2.10 FABRICATION

- A. General: Design components and field connections required for erection to permit easy assembly.
 1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
 2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
- D. Secondary Framing: Shop fabricate framing components to size and section by roll-forming or break-forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
- E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

PART 3 - EXECUTION

3.1 ERECTION OF STRUCTURAL FRAMING

- A. Erect metal building system according to manufacturer's written erection instructions and erection drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - 3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
 - 2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.
- F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.
 - 1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.
 - a. Joint Type: Snug tightened or pretensioned.
- G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.
 - 1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
 - 2. Locate and space wall girts to suit openings such as doors and windows.
 - 3. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

- H. Steel Joists: Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.
 - 1. Before installation, splice joists delivered to Project site in more than one piece.
 - 2. Space, adjust, and align joists accurately in location before permanently fastening.
 - 3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
 - 4. Bolt joists to supporting steel framework using carbon-steel bolts unless high-strength structural bolts are required by the manufacturer.
 - 5. Comply with RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for high-strength structural bolt installation and tightening requirements.
 - 6. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.
- I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.
 - 1. Tighten rod and cable bracing to avoid sag.
 - 2. Locate interior end-bay bracing only where indicated.
- J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.
- K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.2 METAL PANEL INSTALLATION, GENERAL

- A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
 - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
 - 2. Install metal panels perpendicular to structural supports unless otherwise indicated.
 - 3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Locate metal panel splices over, but not attached to, structural supports with end laps in alignment.
 - 6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

- B. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
 - 1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants recommended by metal panel manufacturer.
 - 1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
 - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.3 METAL ROOF PANEL INSTALLATION

- A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
 - 1. Install ridge caps as metal roof panel work proceeds.
 - 2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.
- B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.
 - 1. Install clips to supports with self-drilling or self-tapping fasteners.
 - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 - 3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
 - 5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement due to thermal expansion and contraction. Predrill panels for fasteners.
 - 6. Provide metal closures at peaks, rake edges, rake walls and each side of ridge caps.
- C. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.

1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
 2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
 3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
 4. At metal panel splices, nest panels with minimum 6-inch end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
- D. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.4 METAL WALL PANEL INSTALLATION

- A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.
1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
 2. Shim or otherwise plumb substrates receiving metal wall panels.
 3. When two rows of metal panels are required, lap panels 4 inches minimum.
 4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
 5. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Pre-drill panels.
 6. Flash and seal metal wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.
 7. Install screw fasteners in predrilled holes.
 8. Install flashing and trim as metal wall panel work proceeds.
 9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated; or, if not indicated, as necessary for waterproofing.
 10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
 11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.
- B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

3.5 METAL LINER PANEL INSTALLATION

- A. Attach liner panels to base angle and framing with fasteners according to manufacturer's written instructions. Install panels perpendicular to supports unless otherwise indicated. Anchor liner panels securely in place.
1. Provide/attach cap at top of liner panels for a complete and finished wall.

2. Provide end laps of not less than 4 inches and side laps of not less than 1-1/2 inch corrugations.
3. Align horizontal laps with adjacent panels.
4. Seal intermediate end laps and side laps with manufacturer's recommended sealant.

3.6 METAL SOFFIT PANEL INSTALLATION

- A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.
- B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.7 THERMAL INSULATION INSTALLATION

- A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.
 1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
 2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
 3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
- B. Blanket Roof Insulation: Comply with the following installation method:
 1. Between-Purlin Installation: Extend insulation and vapor retarder between purlins. Carry vapor-retarder-facing tabs up and over purlin, overlapping adjoining facing of next insulation course and maintaining continuity of retarder. Hold in place with bands and crossbands below insulation.
 2. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.
- C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal wall panels fastened to secondary framing.
 1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.8 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.

2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
 3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
1. Provide elbows at base of downspouts to direct water away from building.
 2. Tie downspouts to underground drainage system indicated.
- E. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

END OF SECTION

SECTION 312000
EARTH MOVING

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specifications sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1 – General Requirements” form a part of this Section by this reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions.

1.3 SUMMARY

- A. This Section includes the following:
 - 1. Preparing sub-grades for walks, pavements, lawns and grasses.
 - 2. Excavating for utilities and other improvements.
- B. Related Sections include the following:
 - 1. Division 32 Section "Turf and Grasses" for finish grading, including preparing and placing topsoil and planting soil for lawns.

1.4 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
- B. Base Course: Course placed between the sub-base course and hot-mix asphalt paving.
- C. Bedding Course: Course placed over the excavated sub-grade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above sub-grade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below sub-grade elevations or beyond indicated lines and dimensions as directed by Department. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 3. Unauthorized Excavation: Excavation below sub-grade elevations or beyond indicated lines and dimensions without direction by Department. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- G. Fill: Suitable soil materials used to raise existing grades.
- H. Rock: Rock material in beds, ledges, un-stratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,090 lbf and stick-crowd force of not less than 18,650 lbf ; measured according to SAE J-1179.
 2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 48,510-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.
- I. Sub-base Course: Course placed between the sub-grade and base course for hot-mix asphalt pavement, or course placed between the sub-grade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Sub-grade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below sub-base, drainage fill, or topsoil materials.

1.5 SUBMITTALS

- A. Make submissions in accordance with 'SCHEDULE OF MATERIAL SUBMITTALS', attached at end of the Specifications.
- B. No deviations, substitutions or changes of materials, to be incorporated into this project, shall be made after approval by the Department, except for written direction by and the approval of the manufacturer of a specific item and re-approval by the Department.
- C. The Department retains the right to require additional items not specifically denoted to be submitted for approval and/or additional clarification.

1.6 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548. All materials under this Section shall be factory certified, first run material, seconds will not be permitted and be certified according to PENNDOT Specification 408.
- B. Non-Compliant Materials - Any material found not to be in compliance with the requirements of this Section, through testing and/or other means, whether installed individually and/or as a part of a system or not, shall be immediately removed from the job site and replaced with compliant materials at no additional cost to the Contract.
- C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D 698 for each on-site and borrow soil material proposed for fill and backfill.
 - 3. Compaction Density Test Reports according to ASTM D 2922 – Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. Aggregate Material Tests: Conduct aggregate material quality tests in accordance with the following:
 - 1. PDT Section 703.1, Fine Aggregate
 - 2. PDT Section 703.2, Coarse Aggregate
 - 3. PDT Section 703.3 Select Granular Material (2RC)

1.7 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Notify Department not less than three days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Department's written permission.
 - 3. Contact utility-locator service for area where Project is located before excavating.

PART 2 - PRODUCTS

2.1 **DISCLAIMER:** Items specified by specific name of a manufacturer is only to provide a guide to type, performance quality, characteristics, etc. Equal products by manufacturers not specified will be considered for inclusion into this project provided that they are submitted with sufficient supporting data/information on which to base a decision for approval. In certain cases, which will be so noted, specific items **must** be used in order to be compatible with existing systems.

2.2 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM AASHTO M 145 Soil Classification Groups A-1, A-2-4, A-2-5, and A-3, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Sub-base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- H. Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of sub-grade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section "Site Clearing," during earthwork operations.
- D. Provide protective insulating materials to protect sub-grades and foundation soils against freezing temperatures or frost.

3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared sub-grades, and from flooding Project site and surrounding area.
- B. Protect sub-grades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
 - 2. Install a dewatering system to keep sub-grades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

- A. Explosives: Explosives may not be used for any part of this project.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to sub-grade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended as bearing surfaces.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and sub-grades.

3.7 SUBGRADE INSPECTION

- A. Notify Department when excavations have reached required sub-grade.
- B. If the contractor encounters unforeseen sub-grade conditions that are considered unsatisfactory for construction or that do not meet compaction requirements, they will notify the department prior to any further excavation or site construction. If the Department determines that unforeseen unsatisfactory sub-grade is present, they will determine the additional work to be completed and submit a change order request through the contracting officer.
- C. Proof-roll sub-grade below the pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated sub-grades.
 - 1. Completely proof-roll sub-grade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph .
 - 2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons .
 - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
- E. Reconstruct sub-grades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Department, without additional compensation.

3.8 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Surveying locations of underground utilities for Record Documents.
2. Removing trash and debris.
3. Construction below finish grade including, where applicable, sub-drainage, damp-proofing, waterproofing, and perimeter insulation.
4. Testing and inspecting underground utilities.
5. Removing concrete formwork.
6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on sub-grades free of mud, frost, snow, or ice.

3.9 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under walks and pavements, use satisfactory soil material.

C. Place soil fill on sub-grades free of mud, frost, snow, or ice.

3.10 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate sub-grade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under structures, building slabs, steps, and pavements, scarify and re-compact top 12 inches of existing sub-grade and each layer of backfill or fill soil material at 95 percent.

2. Under walkways, scarify and re-compact top 6 inches below sub-grade and compact each layer of backfill or fill soil material at 92 percent.
3. Under lawn or unpaved areas, scarify and re-compact top 6 inches below sub-grade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent. Utility trenches within a pavement area shall be compacted according to #1 above.

3.12 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 1. Provide a smooth transition between adjacent existing grades and new grades.
 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish sub-grades to required elevations within the following tolerances:
 1. Lawn or Unpaved Areas: Plus or minus 1/2 inch.
 2. Walks: Plus or minus 1/2 inch .
 3. Pavements: Plus or minus 1/4 inch.

3.13 SUBBASE AND BASE COURSES

- A. Place sub-base and base course on sub-grades free of mud, frost, snow, or ice.
- B. On prepared sub-grade, place sub-base and base course under pavements and walks as follows:
 1. Install separation geotextile on prepared sub-grade according to manufacturer's written instructions, overlapping sides and ends.
 2. Place base course material over sub-base course under hot-mix asphalt pavement.
 3. Shape sub-base and base course to required crown elevations and cross-slope grades.
 4. Place sub-base and base course 6 inches or less in compacted thickness in a single layer.
 5. Place sub-base and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 6. Compact sub-base and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.14 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test sub-grades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Sub-grade: At footing sub-grades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing sub-grades may be based on a visual comparison of sub-grade with tested sub-grade when approved by the Department.
- D. Testing agency will test compaction of soils in place according to ASTM D 2922 as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved and Building Slab Areas: At sub-grade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than 3 tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least 1 test for each 100 feet (30 m) or less of wall length, but no fewer than 2 tests.
 - 3. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet (46 m) or less of trench length, but no fewer than 2 tests.
- E. When testing agency reports that sub-grades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.
- F. The contractor will provide the Department with copies of all test reports prior to final backfill and certification of calibration of nuclear density gauge.

3.15 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and re-compact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.16 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Department's property.
 1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Department's property.
 2. The Department will retain all satisfactory soils originated from Ft. Indiantown Gap.

END OF SECTION

SCHEDULE OF MATERIAL SUBMITTALS														PROJECT NUMBER DMVA Project No.: 42150101				PROJECT TITLE Scranton/Taylor FMS Pre-Engineered Steel Storage Bldg.																	
ITEM NUMBER	ITEM OR DESCRIPTION OF ITEM, CONTRACT REFERENCE, TYPE OF SUBMITTAL	NUMBER OF COPIES REQUIRED											REQUIRED SUBMISSION DATE	DATE RECEIVED IN CONTRACTING	DATE TO ENGINEERING AND ARCHITECTURE	DATE TO CONTRACTING FROM E&A	DATE CONTRACTOR NOTIFIED				RESUBMITTAL				REMARKS										
		CERTIFICATE OF COMPLIANCE	SHOP DRAWINGS	SAMPLES	COLOR SELECTION	MANUFACTURER'S RECOMMENDATIONS	MANUFACTURER'S WARRANTY	CATALOG DATA	OPERATING INSTRUCTIONS	REPORTS	BATCH SLIPS	STEEL CERTIFICATIONS					ACCEPTED	ACCEPTED AS NOTED	REVISE & RESUBMIT	NOT ACCEPTED	DATE OF RESUBMITTAL TO CONTRACTING	DATE OF RESUBMITTAL TO E&A	DATE OF RESUBMITTAL TO CONTRACTING FROM E&A	DATE OF FINAL APPROVAL											
1	017823 - O&M manuals																																		(3) Three manuals copies required
2	033000 - Concrete																																		
3	042000 - Unit Masonry	2			2			5																											
4	055000 – Metal Fabrications							5																											
5	072100 - Thermal Insulation	2				5		5																											
6	072200 – Roof Accessories		5		5	5		5																											
7	079200 - Joint Sealant	2			2			5																											
8	081113 - Hollow Metal Doors and Frames		5				2	5																											
9	083323 - Overhead Door		5		2		2	5	2																										
10	087100 - Door Hardware					5		5																											
11	099100 - Painting				2	5		5																											
12	104416 – Fire Extinguishers	2				5		5																											
13	133419 – Metal Building System		5		2		2																												
14	As-Built drawings, CAD & printed versions(1 Set)																																		

* NOTE: This form is provided for contract compliance and does not alleviate any requirements stated in the specifications.

SECTION 260500

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification sections “General Conditions of the Construction Contract”, “Special Conditions”, and “Division 1- General Requirements” form a part of this section by this reference thereto, and shall have the same force and effect as if printed herewith in full.
- B. Contractor: “Contractor”, “this Contractor” or “Electrical Contractor” when used in Divisions 26, 27, and 28 Specification Sections refers to the Contractor responsible for all work under this section.
- C. Sub-Contractor: Any reference to, or letting of work contained in these specifications to any Sub-Contractor or Manufacture does not relieve this Contractor for all work, material and equipment in these specifications.
- D. All references made to any item in the singular number shall apply to as many identical items that the work may require.
- E. Where applicable, all materials and equipment shall bear the label of the Underwriters Laboratory, Inc., or other nationally recognized testing laboratory and shall be used and/or installed in accordance with any instructions included with the listing or labeling.
- F. The sizes of conductors and thickness of metals shown on the drawings or mentioned herein shall be understood to be American Wire Gauge.
- G. All materials shall be made from steel manufactured in America and certification shall be submitted.
- H. Any reference made to the “Engineer” in these specifications shall refer to the Personnel of the Engineering Design Division of the Department of General Services.
- I. Any reference made to the “Department” in these specifications shall refer to the Personnel of the Department of General Services.
- J. Any reference made to the “Using Agency” in these specifications shall refer to the Personnel of the Department of Military & Veteran’s Affairs.

1.2 SUMMARY

- A. This Section applies to all Divisions 26, 27 and 28 Sections and includes the following:
 - 1. General Provisions:

- a. Definitions.
- b. Intent.
- c. Work Included.
- d. Responsibility of Bidders.
- e. Quality Assurance.
- f. Submittals.
- g. Substitutions.
- h. Guarantees.
- i. Regulations.
- j. Standards and References.
- k. Permits and Inspections.
- l. Project/Site Conditions.
- m. Delivery, Storage and Handling.
- n. Protection of Services and Equipment.
- o. Sequencing, Scheduling and Coordination.
- p. Type of Service.
- q. Incoming Electric Service Facilities.
- r. Interruption of Services.
- s. Temporary Electrical Service.
- t. Hazardous Materials.
- u. Operating and Maintenance Manuals.
- v. Record Drawings.
- w. Electrical/Mechanical Sound Control.
- x. Final Acceptance.
- y. Using Agency Instruction.

2. Products:

- a. Vibration Isolators.
 - b. Access Panels.
 - c. Concrete Work.
 - d. Painting.
 - e. Touchup Paint.
3. Execution:
- a. General Installation.
 - b. Electrical Equipment Installation.
 - c. Demolition.
 - d. Existing Panelboards.
 - e. Existing Wiring.
 - f. Equipment Connection.
 - g. Splices.
 - h. Terminals and Connectors.
 - i. Balancing.
 - j. Excavation and Backfilling.
 - k. Field Quality Control.
 - l. Core Drilling.
 - m. Cutting and Patching.
 - n. Cleaning.
 - o. Refinishing and Touchup Painting.
 - p. Mounting Heights.

1.3 DEFINITIONS

- A. Provide: The term “provide”, as used in these specifications and on the drawings, shall be understood to mean “the Contractor shall furnish and install, complete and operational, with all required hardware, accessories and appurtenances.” Unless indicated otherwise, this shall also

include all associated power and/or signal wiring required for electrical systems furnished under this Contract.

- B. Concealed: Where the word “concealed” is used in conjunction with raceways, equipment and the like, the word is understood to mean hidden from sight as in chases, furred spaces or suspended ceilings.
- C. Exposed: Where the word “exposed” is used in conjunction with raceways, equipment and the like, the word is understood to mean open to view.
- D. Approved Equal: Where the phrase “or approved equal,” “or equal,” or “approved” appears, it shall refer to the approval of the Engineer on the materials or equipment involved.

1.4 INTENT

- A. Provide complete and fully operational electrical systems with facilities and services to meet all of the requirements described herein and in complete accordance with all applicable codes and ordinances.
 - 1. The manufacturer's recommendations for the particular equipment or system, the National Electrical Code and the Engineer shall determine what is the complete and proper installation and proper operation. The Engineer shall make the final determination.
- B. The drawings are diagrammatic and approximately to scale, unless noted otherwise. They establish scope, material and quality and are not detailed installation instructions.
- C. The Contractor shall be held responsible for proper installation of materials and equipment to true intent and meaning of both Drawings and Specifications.
- D. In cases of discrepancies between the drawings and the specifications, the Engineer will make the final determination. In cases where items appear in the specifications but not on the drawings, or appear on the drawings but not in the specifications they shall be considered as noted on both. Unless written clarification in the form of an addendum is received, the bid shall be interpreted to include the most expensive installation, equipment or work and all associated costs.
- E. The Engineer reserves the right of interpretation of the specifications and drawings. The Engineer's decisions of specification and drawing interpretations shall be final.

1.5 WORK INCLUDED

- A. Refer to Division 1, General Requirements, specification section 01010, Summary of Work for details of work included in project.

1.6 RESPONSIBILITY OF BIDDERS

- A. Examine all contract documents issued. Visit the site and become thoroughly acquainted with the existing conditions prior to submitting a bid. The submission of a bid shall be considered as

evidence that a site visit was conducted; no extra compensation will be allowed for any error resulting from failure to visit job site. Prior to submitting a proposal, bidders must familiarize themselves with the codes, rules, and regulations in effect at the site of the work, to determine existing conditions that affect their installation.

- B. Carefully examine the Architectural, Structural, Heating, Ventilating, Air Conditioning, Plumbing, Fire Protection, and/or Miscellaneous Contract Drawings and Specifications. If any discrepancies occur between the drawings or between the drawings and specifications, report such discrepancies to the Engineer in writing and obtain written instructions as to the manner in which to proceed. Do not make departures from the Contract Drawings without prior written approval of the Engineer.
- C. Execute all work, construct and install all equipment in accordance with the current requirements of all Occupational Safety and Health Administration (OSHA), National Fire Protection Association (NFPA), the National Electrical Code (NEC) as amended to date L&I has adopted, Underwriters Laboratories (UL), National Electrical Manufacturers Association (NEMA), insurance underwriters of the Using Agency and/or other authorities having jurisdiction over premises, public utilities which have connection with any systems specified, and all Federal, State, County and Local ordinances and regulations. Nothing contained in these specifications or shown on the drawings shall be construed to conflict with the aforesaid codes, ordinances, or regulations. Contractor shall be held responsible for accident to persons, material or property caused by failure to adhere to the proper code requirements until the Department has accepted work.
- D. The Contractor shall be qualified or licensed to perform the types of work involved under this Division of the Specifications, in the state, county and/or municipality of this project as required.
- E. Wherever any installation, product, equipment item, etc. specified herein is not permitted to be handled or installed, or is otherwise restricted by union regulations, etc., notify the Department in writing before submitting a bid, in ample time for modifications in the requirements to be made. If such notification is not given, this Contractor shall be responsible to complete the installation as specified, to the Department's satisfaction, and at no additional cost.

1.7 QUALITY ASSURANCE

A. Products Criteria:

1. Standard Products: Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products for at least three years. See applicable specification sections for any additional requirements.
2. Equipment Service: Products shall be supported by a service organization that maintains a complete inventory of repair parts and is located reasonably close to the site.
3. Multiple Units: When two or more units of materials or equipment of the same type or class are required, these units shall be products of one manufacturer.
4. Assembled Units: Manufacturers of equipment assemblies, which use components made by others, assume complete responsibility for the final assembled product.

5. Nameplates: Nameplates bearing manufacturer's name or identifiable trademark shall be securely affixed in a conspicuous place on equipment, or name or trademark cast integrally with equipment, stamped or otherwise permanently marked on each item of equipment.

B. Manufacturer's Recommendations: Install materials in accordance with manufacturer's recommendations.

1.8 SUBMITTALS

A. General Requirements Applicable to all Divisions 26, 27 and 28 Sections:

1. Submit in accordance with Division 1, General Conditions, Section 01300 and the following:
 - a. Prior to ordering equipment, submit to the Engineer a complete list of proposed equipment and materials, giving the name and address of manufacturer and, when required for proper identification, trade names or catalog numbers. Itemize each type of material and each piece of equipment (omitting duplicates).
 - b. Submit shop drawings and product data grouped to include complete submittals of related systems, products and accessories in a single submittal. Produce shop drawings to indicate fabrication details and proposed layouts for shop or field fabrications as named herein.
 - c. Mark dimensions and values in units to match those specified. Include contract drawing identification, type, quantities, capacities, accessories, rough-in dimensions, manufacturer's name, model number, connection sizes, wiring diagrams, installation instructions, motor horsepower, voltage, phase and amperage, colors, finishes and other pertinent data.
 - d. The submissions are the contractor's documents; the Engineer's approval constitutes an acknowledgment that the documents have been submitted and nothing more. It is the contractor's responsibility to check his own submissions for compliance with the Contract Documents, job conditions, and coordination with the work and equipment of the other trades.
 - e. Certify, by submittal, that the materials or equipment proposed are satisfactory for the intended application, and that the materials or equipment are in current production with no known plans to cease manufacture.
 - f. Submittals processed by the Engineer do not constitute change orders. The purpose of the submittal process is to demonstrate the Contractor's understanding of the design concept; the Contractor demonstrates this understanding by indicating which equipment and materials he intends to provide, and the fabrication and installation methods that he intends to use.

- g. If deviations, discrepancies or conflicts between shop drawing submittals and the contract documents (in the form of design drawings, specifications and addenda) are discovered, either prior to or after shop drawing submittals are processed by the Engineer, the contract documents shall control and shall be followed.
- h. All submittals shall bear the Contractor's approval stamp as evidence that he has checked the drawings. Any submittals without this stamp of approval will not be evaluated and will be returned to the Contractor for proper resubmission. Material and equipment reviews by the Engineer are only for general conformance to the design intent of the project and compliance with information given in the contract documents. Dimensions shall be confirmed and correlated at the job site by the installing Contractor and installation shall be coordinated with other trades.
- i. Coordination composite drawings among the HVAC, Plumbing, Fire Protection, Electrical and Ceiling Contractors are required, with the lead role assigned by the Department. The Lead Contractor shall conduct coordination meetings with all other trades to discuss and resolve interference problems. Once each trade Contractor has initialed the coordination drawings to indicate approval, the Lead Contractor shall submit the drawings to the Engineer for review. The other trade Contractors should finalize their shop drawings in accordance with the coordination drawings, and submit for Engineer's review.
- j. Submit samples of materials for approval at the site as requested by the Engineer. Such materials may be incorporated into the project after approval and serving their purpose as samples.

1.9 SUBSTITUTIONS

- A. Submit substitution proposals in accordance with provisions of Division 1, General Conditions and the following:
- B. Throughout the specifications, types of materials may be specified by manufacturer's name and catalog number in order to establish standards of quality and performance and not for the purpose of limiting competition. Unless specifically stated otherwise, assume the phrase "or approved equal", except that the burden is upon the Contractor to prove such equality. If the Contractor elects to prove such equality, he shall request, in writing, review of the substitution by the Department in accordance with all Supplementary Conditions and/or Division 1 requirements. All such requests shall include manufacturer's literature, specifications, drawings, catalog cuts, performance data or other references or information necessary to completely describe the item. The Contractor shall be responsible for all structural, mechanical, and electrical changes required for their installation, at no additional cost to the Department.
- C. A substitution request constitutes a representation that the Contractor:
 - 1. Has investigated the proposed product and determined that it meets or exceeds the quality level of the originally specified product.
 - 2. Will provide the same or greater warranty than the originally specified product.

3. Will coordinate the installation and make changes to all other work including coordination and compensation to other trades that may be required for the substituted product to be installed with no additional cost to the Department.
 4. Waive claims for additional costs or time extensions, which may subsequently become apparent.
- D. When this contractor desires to furnish equipment of a manufacturer other than that specified or intended, he shall include a complete specification of the substituted item, along with each submission copy of shop drawings, indicating the necessary modifications to the substituted product to satisfy the requirements of the contract specifications. Manufacturer's specifications shall be written as close as possible over the contract specifications so that an accurate comparison can be made.
 - E. The verification specification shall include the exact wording of the contract specification and the revised wording, identified properly, indicating all the deviations proposed. If no deviations are noted, the contractor shall furnish the material or equipment in accordance with the contract specifications.
 - F. Substitutions will be considered when a product becomes unavailable through no fault of the Contractor.
 - G. Also, when the contractor submits equipment or materials of the manufacturers specified, verification specifications must be submitted at the request of the Engineer.
 - H. In cases where specific manufacturers are listed, the Engineer reserves the right to consider alternate manufacturers.
 - I. The Engineer reserves the right of final acceptance of substitutions.

1.10 GUARANTEES

- A. Submit equipment warranties in accordance with provisions of Division 1, General Conditions and the following:
- B. Guarantee all equipment, materials, and workmanship for a minimum of one year following date of acceptance of the project. Provide additional/special warranties where called for in the technical specifications.
- C. Warranty shall be in writing and shall include written copies of factory warranties with expiration dates on items of equipment where warranty date might differ from the acceptance date. No warranty shall start before date of acceptance in writing by the Department. Repair or replace any defective work developing during this period, at no additional cost. Where defective electrical work results in damage to work of other contracts, this contractor shall be responsible to repair and/or restore such work to its original condition, again at no additional cost to the Department.
- D. The equipment and materials manufacturers are expected to recognize that they are responsible for the failure of their products to perform in accordance with data furnished by them or their authorized representatives, as well as misrepresentations of such data. If the products have been

installed in accordance with the manufacturers published or written instructions and recommendations, and such products fail, then the Contractor and the manufacturers are responsible for replacement of the products and all associated work and materials, at no cost to the Department.

1.11 REGULATIONS

A. All electrical work, equipment and material furnished or installed under this contract shall conform to requirements of the latest codes and any other Governmental or Local Authorities having jurisdiction and of all rules and regulations of Utilities involved. Nothing mentioned in the specifications or indicated on the drawings shall be construed to conflict with mentioned codes, ordinances and regulations. The following codes shall be followed:

1. Pennsylvania Uniform Construction Code (UCC)
2. National Electrical Code (NFPA 70)
3. National Electrical Safety Code (NESC-ANSI-C2)
4. Life Safety Code (NFPA 101)
5. National Fire Alarm Code (NFPA 72-2008)
6. International Code Council Series (ICC-2009)
7. Pennsylvania Department of Environmental Protection (DEP)
8. Pennsylvania Department of Labor and Industry (L&I)
9. Americans with Disabilities Act (ADA)
10. Occupational Safety & Health Agency (OSHA)
11. Applicable utility company rules and regulations.
12. Applicable Federal, State, and Local (or any other authority having jurisdiction) laws, rules and regulations.

1.12 STANDARDS AND REFERENCES

A. Products of workmanship that are specified by association, trade, or federal standards shall comply with the requirements of the following reference standards, except when more rigid requirements are specified or are required by applicable code:

1. American National Standard Institute (ANSI)
2. American Society for Testing and Materials (ASTM)
3. Factory Mutual System (FM)

4. Institute of Electrical and Electronics Engineers (IEEE)
5. Illuminating Engineering Society of North America (IESNA), Lighting Standards and Recommended Practices
6. National Electrical Manufacturers Association (NEMA)
7. National Fire Protection Association (NFPA)
8. Underwriters Laboratories, Inc. (UL)
9. Updated Standards: At the request of the Engineer, Contractor or governing authority, submit a change order proposal where an applicable industry code or standard has been revised and reissued after the date of contract documents and before performance of the work affected. The Engineer will decide whether to issue a change order to proceed with the updated standard.

1.13 PERMITS AND INSPECTIONS

- A. Refer to Division 1 – General Requirements.

1.14 PROJECT/SITE CONDITIONS

- A. Refer to Division 1 - General Requirements.
- B. Install work in locations shown on the drawings, unless prevented by project conditions
- C. Prepare drawings showing proposed rearrangement of work to meet project conditions, including changes to work specified in other sections. Obtain permission of the Engineer before proceeding.
- D. Perform all minor cutting and patching, and make all changes, relocations and installations with a minimum of noise. All present and new equipment, floors, walls, etc., shall be adequately protected from dust and dirt caused by the work. Protection shall include suitable temporary barriers or coverings. Maintain exterior and interior premises of the building as clean as possible during construction. At no time shall the Contractor interfere with the normal operation of the building by allowing debris, excess earth, etc., to remain on the premises.

1.15 DELIVERY, STORAGE AND HANDLING

- A. Refer to Division 1 - General Requirements.
- B. Deliver materials and equipment to the project site in a clean condition with openings plugged or capped (or otherwise sealed by packaging) both during shipping and during temporary storage. Deliveries shall be scheduled to minimize the amount of time in temporary storage.

- C. Delivered equipment crating and/or packaging shall clearly identify pick points or lifting points. In the absence of crating or packaging, pick points or lifting points must be identified on the equipment.
- D. When unloading material and equipment, provide special lifting harness or apparatus as required by the manufacturer. Handle materials and equipment in accordance with manufacturer's written instructions.
- E. Determine the required equipment needed for unloading operations and have such equipment on site to perform unloading work on the date of equipment delivery.
- F. Store materials on site only where directed by the Department. Materials and equipment, both on site and off site, shall be stored in accordance with manufacturers written instructions. Store all materials in dry locations, off ground and keep moisture free at all times.
- G. The Contractor shall protect at his own expense, his work, materials, and equipment during construction. Units and devices, both before and after being set in place, shall be securely protected from carelessly or maliciously dropped tools, materials, grit, dirt or any foreign matter. Contractor shall be held responsible for damage so done until work is fully and finally accepted.
- H. The Contractor shall be entirely responsible for all apparatus, equipment and appurtenances furnished by him or his subcontractors in connection with the work, and special care shall be taken to protect all parts thereof in such manner as may be necessary or as may be directed. Protection shall include covers, crating, sheds or other means to prevent dirt, grit, plaster, or other foreign substances from entering the working parts of machinery or equipment. Where equipment must be stored outside the building, it shall be totally covered and secured with heavy, waterproof tarps and kept dry at all times. Where equipment has been subjected to moisture, it shall be suitably dried out before placed in service. Materials and equipment shall be stored in areas designated by the Department.
- I. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products and equipment to assure that they are being maintained under specified conditions, and free from damage or deterioration.

1.16 PROTECTION OF SERVICES AND EQUIPMENT

- A. This Contractor shall, at his own expense, repair, replace and maintain in service any utilities, facilities or service (underground, overhead, interior or exterior) damaged, broken, or otherwise rendered inoperative during the course of construction by him or his representatives. The method used by this Contractor in repairing, replacing or maintaining the services shall be approved by the Department.

1.17 SEQUENCING, SCHEDULING AND COORDINATION

- A. Refer to Division 1 - General Requirements.

- B. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installations that follow.
 - 1. Set inserts and sleeves in poured-in-place concrete, masonry work, and other structural components as they are constructed.
- C. Coordinate location of access panels and doors for electrical items that are concealed by finished surfaces.
- D. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.
- E. Interference:
 - 1. The drawings are generally diagrammatic and indicative of the work. The Contractor is responsible for modifying the work with offsets, bends, or other fittings to avoid minor interference's and structural obstructions. Perform such modifications at no increase in cost to the Department.
 - 2. In the event that interferences develop, the Engineer's decision will be final and no additional compensation will be allowed for relocation of electrical equipment.
- F. Contract Interface:
 - 1. Work performed in cooperation with other contracts: The responsibility for performing work of this contract in cooperation with work of other contracts rests solely with this Contractor.
 - a. Make connections of electrical systems specified in the various sections of this contract to those systems or installations of other contracts requiring such connections.
 - b. These connections are generally indicated as contract breaks on the drawings.

1.18 TYPE OF SERVICE

- A. Existing Electric Service shall remain: - 120/240V-3 phase, 4 wire (High-Leg), 800A, 60 HZ, alternating current.

1.19 INCOMING ELECTRIC SERVICE FACILITIES

- A. Provide all electrical facilities as shown on the drawings, hereinafter specified or as required for maintaining the existing electric service entrance during construction.

1.20 INTERRUPTION OF SERVICES

- A. Refer to General Conditions of the Contract.
- B. At beginning of the project, review the procedures of the Using Agency relating to utility interruptions and plan the electrical work accordingly. Develop a preliminary utility interruption schedule and submit to the Using Agency for approval before developing final project schedules.
- C. Schedule the work to avoid major interruptions of any utility services. Interruption of services shall be done during overtime if necessary at no additional cost to the Department.
- D. Notify the Using Agency in writing a minimum of five working days prior to any interruption of services.

1.21 TEMPORARY ELECTRICAL SYSTEMS

- A. Refer to Division 1 - General Requirements.

1.22 HAZARDOUS MATERIALS

- A. Should hazardous or toxic materials be encountered in any existing work, the Contractor shall notify the Department.

1.23 OPERATING AND MAINTENANCE MANUALS

- A. Submit under provisions of Division 1 and in accordance with the following:
- B. Provide heavy-duty catalogue binders with appropriate labeling.
- C. Binder shall be indexed by material and/or system type and at a minimum shall include:
 - 1. Title page with clear plastic protection cover.
 - 2. List of Drawings.
 - 3. Description of Systems: Provide complete and detailed description of systems.
 - 4. Operating Division: Provide complete and detailed operation of major components.
 - 5. Maintenance Division: Provide preventative maintenance schedule for major components.
 - 6. List of Equipment Suppliers and Contractors: Provide list of equipment suppliers and contractors, including address and telephone number.
 - 7. Certification: Include copy of tests performed on insulation, grounding, continuity, phase balancing and signal systems; electrical equipment tag identification and wiring color

code; inspection approval certificates for electrical systems and operational tests on applicable electrical equipment.

8. Shop Drawings and Maintenance Bulletins: Provide materials received in compliance with clause 'Shop Drawings', arrange alphabetically.

D. Divider Tabs: Laminated Mylar plastic and colored according to Section.

E. Submit documents for approval prior to being turned over to the Using Agency.

1.24 RECORD DRAWINGS

A. Submit under the provisions of Division 1 and in accordance with the following:

B. Keep on site at all times an extra set of drawings and specifications recording changes and deviations from contract documents including all addendum, bulletin and request for information data. Documents shall be updated on a daily basis. This set of documents shall be used specifically for this purpose.

C. The record drawings shall accurately reflect the as-built conditions at the time of the project completion.

D. Record drawings shall be presented with maintenance manuals to the Department at the time of final acceptance of the project.

1.25 ELECTRICAL/MECHANICAL SOUND CONTROL

A. All equipment shall operate without objectionable noise or vibration within Noise Criteria Curves listed in Sound Control Fundamentals of the latest edition of the ASHRAE Handbook of Fundamentals. Sound and vibration measurements shall conform to the ASHRAE Handbook of Fundamentals. If such objectionable noise or vibration shall be produced and transmitted to occupied portions of the building by electrical/mechanical equipment (i.e. generators, transformers, etc.) or other parts of this work, any necessary changes, as approved shall be made without additional cost to the Department. Noise levels shall conform to the requirements of OSHA.

B. Any and all other insulation or isolation required to accomplish results specified above shall be furnished and installed without additional cost to the Department.

C. Isolation systems shall be installed in strict accordance with the manufacturer's written instructions and submittal data. Locations of all vibration isolation products shall be selected for ease of inspection and adjustment, as well as for proper operation.

D. No rigid connections between equipment and building structure shall be made that degrades the noise and vibration isolation system herein specified. Electrical conduit connections to isolated equipment shall be looped to allow free motion of isolated equipment.

1.26 FINAL ACCEPTANCE

- A. Refer to Division 1 - General Requirements.
- B. When the installation is reported in writing by the contractor to be complete and ready for acceptance, an inspection shall be made by the Contractor in the presence of the Department to ascertain whether it complies with the contract documents. If in the opinion of the Department it fails to do so, the Contractor shall at once remedy all defects and shortcomings. Any additional tests that may be required shall be entirely at the Contractor's expense. All of the testing work shall be done when and as directed by the Department.

1.27 USING AGENCY INSTRUCTION

- A. The Contractor shall furnish the services of qualified personnel, approved by the Engineer and thoroughly familiar with the completed installation, to instruct the permanent operating personnel of the Using Agency in the proper operation of all systems included under this contract, and the proper care of all equipment and apparatus. These services shall be furnished for a period of one 8-hour day, after the operation of the systems has been taken over by the Using Agency.
- B. When instructions are provided under this contract, the Contractor shall have in his possession three copies of an identifying letter which shall list the names of the Contractor's qualified instruction personnel, including manufacturers' representatives and subcontractors that will be giving the instructions. Likewise, on this same letter, spaces shall be provided for the personnel of the Using Agency who will receive the instructions. After instructions have been given and received for each system, the Contractor's representatives and subcontractors shall sign and date the letter, and the Using Agency personnel attending shall sign and date the letter acknowledging that they have received adequate instructions for operating and maintaining the systems and equipment. One signed copy shall be delivered to the Using Agency, one copy to the Department and one copy shall be retained by the Contractor.
- C. In addition to the verbal instructions outlined above, the Contractor and his manufacturers' representatives and subcontractors shall furnish written basic instructions indicating the proper operation of each system and associated equipment. Each manufacturer shall also submit a brochure on his equipment, including instructions on operation, recommended spare parts, and instructions on preventative, routine and breakdown maintenance.
- D. The Contractor shall combine the written instructions and the manufacturers' equipment brochures in complete volumes with hardback binders which shall be turned over to the Using Agency before final acceptance of the contract work. The Contractor shall obtain two copies of a signed receipt from the Using Agency for the written instructions and equipment brochures. One copy of the receipt shall be delivered to the Engineer and one copy retained by the Contractor.

PART 2 - PRODUCTS

2.1 VIBRATION ISOLATORS

A. Neoprene Isolation Pads:

1. Neoprene isolation pads shall be single rib or crossed, double rib neoprene in shear pads, in combination with steel shims when required, having minimum static deflections as tabulated. All neoprene pads shall be true neoprene in-shear using alternately higher and lower ribs to provide effective vibration isolation, and shall be molded using 2500 psi tensile strength, oil resistant, compounds with no color additives. Pads shall be 45 or 65 durometer and designed to permit 60 to 120 psi loading, respectively, at maximum rated deflections. Neoprene in-shear isolation pads shall be provided to meet tabulated minimum operating static deflections without exceeding published maximum static deflections. Use single or, crossed, double rib or laminated composites of both as required. When two pads of ribbed material are laminated, they shall be separated by, and bonded to, a galvanized steel shim plate.

2.2 ACCESS PANELS

- A. Furnish factory-fabricated access panels for access to all concealed pull boxes, junction boxes, capped conduits and other electrical equipment where no other means of access is available. Access panels for electrical work, along with all required auxiliary or supporting steel, hardware, etc., shall be furnished by the electrical contractor to the general contractor, who shall install them. Access panels are not required at lift-out removable tile ceilings.
- B. Access panels shall be of appropriate size but not less than 16" x 12". Panels shall be all steel construction with a #16 gauge wall or ceiling frame and a #14 gauge panel door. Doors shall be provided with concealed hinges and cylinder lock except doors for wall panels which may be secured with suitable clips and countersunk screws. Outside of access panels shall be finished flush with finished walls or ceilings surfaces and shall be prime painted.
- C. At locations where access panels are installed in fire-rated ceilings, access panels shall contain the 1-1/2" hour fire-rated "B" label, and, in addition, shall also be provided with layers of gypsum wallboard in a thickness which will supply an additional one-hour fire rating. Consider all ceiling access panels required in gypsum board or plaster ceilings to be 1 hour rated unless otherwise noted on the Architectural drawings.
- D. Determine the exact locations and sizes of required access panels and coordinate same with the Department. Access panels shall not be installed without prior approval of the Department. All panels shall be installed and located to present a neat and symmetrical appearance.
- E. Junction boxes, capped conduits and other electrical equipment above removable tile ceilings or above panels shall be suitably identified by small, inconspicuous adhesive-backed labels attached to the ceiling surface or the surface of the access panel. Labels shall be additionally secured with screws or rivets. Labels shall be white with 3/8" high black letter and shall be a manufactured item for that purpose.

2.3 CONCRETE WORK

- A. Refer to Division 3 – Cast-In-Place Concrete.
- B. This Contractor shall provide all concrete for equipment foundations, duct-banks and patching as specified or otherwise required for completion of work.
 - 1. Concrete for equipment foundations and pole bases shall be Pennsylvania Department of Transportation, Class A, rated 4000 pounds/square inch at twenty-eight (28) days. Equipment foundations shall be properly dwelled in with floor construction, and shall have slopped bevels on all horizontal and vertical edges. Foundations shall be 4” high, unless otherwise indicated. Foundations shall be reinforced with 6”x 6” #10 gauge wire mesh and anchored through floor construction with ¾” diameter bolts or rods. Anchor bolts for equipment shall be placed in foundations before equipment is set. Foundations shall be of sufficient size for equipment and shall extend a minimum of 4” beyond equipment on all sides.
 - 2. Concrete for conduit encasement shall be Pennsylvania Department of Transportation Class A, rated 3,300 pounds/square inch at twenty-eight (28) days.
 - 3. All concrete shall be obtained from an approved source. Concrete testing is not a requirement, however, batch slips shall be given to the inspector for checking.
 - 4. All concrete shall be 6% air entrained and the slump of concrete shall not exceed three inches. All concrete shall be thoroughly compacted by the use of mechanical vibrators.
 - 5. All work associated with the handling, placing of reinforcing steel and curing shall be done according to the recommendations of the American Concrete Institute and Concrete Reinforcing Steel Institute, and all materials shall conform to the American Society for Testing Materials Specifications, applicable to this work.
 - 6. To insure adequate curing, do not remove forms from vertical surfaces for five (5) days after casting unless other approved means are taken to prevent premature drying of concrete. Keep all horizontal surfaces continuously wet for seven (7) days with mechanical sprinklers or coat with an impervious sealer, applied in atomized form at a rate of not less than one (1) gallon per two hundred square feet after surface water has entirely disappeared, but while surfaces are still moist. This compound shall form an effective seal which will prevent evaporation of moisture from concrete for the full curing period, and shall be used in strict accordance with the manufactures published recommendations.
 - 7. Provide adequate equipment for heating the concrete and protecting the concrete during freezing or near freezing weather. All concrete materials, reinforcement, forms and ground with which the concrete will come in contact shall be free of frost.
 - 8. After the first frost and until the mean daily temperature at the site falls below 40 degrees for more than one (1) day, protect concrete from freezing for not less than the first forty-eight (48) hours after it is placed. When the mean temperature falls below 40 degrees for more than one (1) day, place concrete thereafter at a temperature not lower than 55 degrees and not higher than 70 degrees, and maintained not lower than 55 degrees for at least the first three (3) days. During the next three (3) days protect from freezing. When

the mean daily temperatures rise above 40 degrees for more than three (3) successive days, placement and maintenance of concrete for three (3) days at or above required minimum temperatures may be discontinued, but concrete should not be exposed to freezing temperatures for at least forty-eight (48) hours after placing.

2.4 PAINTING

- A. This Contractor shall paint all exposed raceways, hangers, junction boxes, etc., that this Contractor installs in finished areas. Finished areas shall be those areas where the surfaces are plastered, glazed tile, painted block, etc. This Contractor is not responsible for any other painting except as otherwise noted.
- B. Where the Contractor is the only Contractor working in a specified area, he shall be responsible for painting equipment and related raceway, if classified a finished area.

2.5 TOUCH-UP PAINT

- A. For Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- B. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.
- C. Panelboard trims and doors, safety switch and circuit breaker enclosures, and items of similar nature shall be baked enamel finished at the place of manufacture. Damage to the factory finish due to shipment or installation shall be "touched-up" by this Contractor with factory supplied paint

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION

- A. All work shall be installed in a neat and workmanlike manner by craftsmen experienced in the trade involved and shall be acceptable to the Department. All details of installation shall be mechanically and electrically correct. All materials and equipment shall be new, and without imperfections or blemishes, unless otherwise noted. Before ordering any material or doing any work, the Contractor shall verify all measurements at the site and shall be responsible for the correctness of same.
- B. The Contractor shall lay out his work from dimensions of bid documents, actual dimensions taken at the site, and from the approved dimensions of equipment being installed. Layouts in congested areas should not be scaled from the electrical and mechanical drawings. No extra compensation will be allowed on account of difference between actual dimensions and measurements and those indicated on the drawings. Any difference, which may be found, shall be submitted to the Department for consideration before proceeding with the work.
- C. This specification includes under each item all labor, material and equipment necessary to properly install complete, adjust, and place in operating condition, satisfactory to the Department, the several branches of work described herein. This shall include all necessary

interconnections between the several branches of work described herein, and connections to work under other sections of specifications and other contractors.

- D. All items of labor, material or equipment not described in detail by specifications or drawings, but which are incidental to or necessary for complete installation and proper operation of several branches of work described herein, or reasonably implied in connection therewith, shall be furnished and/or installed as if called for in detail by drawings or specifications.
- E. The drawings are generally indicative of the work required and shall be followed as closely as circumstances will permit, however they do not indicate all bends, fittings, boxes and accessories which may be required. The Contractor shall carefully investigate structural and finish conditions affecting work and arrange work accordingly, furnishing such fittings, accessories, etc., required to meet such conditions. Contractor will be held responsible for proper installation of materials and equipment to the true intent and meaning of contract documents.
- F. The Contractor shall carefully examine all contract documents including those of all other trades, and carry on his work so as not to delay or interfere with the work of other trades. He shall obtain in writing from the other contractors such data as is necessary to coordinate his work with other trades.
- G. The drawings indicate approximate location of wiring, outlets, equipment, etc., and the actual location shall be confirmed at the site with the Department. The department reserves the right to make minor changes in the locations of conduits, outlets, equipment, etc. prior to roughing-in, without incurring additional expense to the Department.
- H. Coordinate location of luminaires, conduit, wire, wiring devices, equipment, etc., to be clear of windows, doors, openings, diffusers, return grilles, sprinklers and other services and utilities. This Contractor shall be held responsible to coordinate his work with that of the other trades so that all work may proceed in an orderly manner and conflicts and delays may be avoided. Where drawings indicate special space allocation for different contracts, contractors shall rigidly adhere to sequence of installation designated by the Department or as required to allow all the trades to work equipment or materials into place in respective order. Special attention shall be paid to work under the floor slabs, above ceilings and in locations otherwise concealed. All work shall be tested before it is closed in.
- I. Secure dimensions of all recessed lighting fixtures, telephone, data and similar device outlets and other equipment immediately upon the award of the Contract. Work closely with the General, HVAC, Plumbing and other Contractors and provide them with the necessary information and dimensions so that there will be no interference between piping, duct work, structural steel, furring channels, etc., and recessed lighting fixtures or other electrical equipment.
- J. In case interference or fouling results, the Department shall decide which item is to be relocated, regardless of which is installed first. The Contractor shall receive no additional compensation for relocating items that result from interference with other work.
- K. Contractor shall determine in advance, location and size of chases and openings necessary for proper installation of his work, and have same provided during erection of work in which chases and openings occur. He shall furnish and set sleeves, hangers, and anchors, and be responsible for their proper and permanent location.

- L. In cases where cutting of new building construction is necessary due to failure to set proper sleeves or inserts, or due to the failure to provide proper openings and chases such cutting shall be done and repaired to match the original condition of the work by the contractor under this specification.
- M. Points of connection and termination of work under this specification are shown on drawings or stated within the specification, but in case of doubt as to such points, the Department's decision will be final.
- N. Follow manufacturer's published recommendations for installation methods not otherwise specified. The Contractor shall furnish the services of manufacturer's representatives for each piece of major equipment furnished under these contract documents. The amount of factory service provided by the contractor shall be as normally recommended and furnished by the various equipment manufacturers unless specified otherwise. Testing of equipment shall be made under the direct supervision of competent authorized service representatives. Any and all expenses incurred by the equipment manufacturers' representatives shall be borne by the contractor.
- O. Contractor shall seal all openings left in building construction by the installation of work specified under this section. Sealing shall be in accordance with "Cutting and Patching" section specified herein.
- P. Where the vapor barrier of any insulation is broken due to the installation of conduit and equipment, the Contractor shall properly repair all insulation and seal all openings with vapor barrier covering and vapor barrier adhesive of type installed with the insulation.
- Q. Upon completion of the work, all remaining waste materials and rubbish resulting from the contract work shall be removed from the building and premises.
- R. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Department for clarification. Do not proceed with work without clear instructions.
- S. The Contractor and his subcontractors shall satisfactorily complete the systems so that they are functional and operating to the satisfaction of the Department. All systems, their controls and their sequencing must be demonstrated to the satisfaction of the Department.

3.2 ELECTRICAL EQUIPMENT INSTALLATION

- A. Headroom Maintenance: If mounting height or other location criteria is not indicated, arrange and install components and equipment to provide the maximum possible headroom.
- B. Materials and Components: Install level, plum, parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components.
- D. Connect for ease of disconnecting, with the minimum interference with other installations.
- E. Right of Way: Give to raceways and piping systems installed at a required slope.

3.3 DEMOLITION

A. Existing Equipment:

1. To accommodate the renovations, disconnect and remove or relocate existing equipment and services as indicated on the plans or as required (whether or not the existing equipment is shown on the drawings). All other existing equipment shall be removed, unless otherwise noted.
2. If new equipment such as receptacles, light fixtures, etc. is to be installed where an existing device is located, the existing outlet box may be reused if it complies with all applicable codes.
3. All existing building equipment to be removed that would be of some value to the Using Agency, such as light fixtures, time clocks, safety switches, panelboards, etc., shall be removed by this Contractor and turned over to the Using Agency for storage.
4. It is this Contractor's responsibility to pay disposal fees for equipment removed. Equipment shall be disposed of in accordance with governing environmental regulations (i.e. ballasts, lamps, transformers, batteries, etc.).

B. Removal of Existing Circuits:

1. Where it is noted for switches, receptacles, fixtures or other electrical equipment to be disconnected and removed; it shall be understood that all wiring, junction boxes, supports, appurtenances and accessories associated with the equipment (not required to remain, due to continuity or other necessity) shall be removed in their entirety.

C. Extension of Existing Circuits:

1. Where existing equipment is indicated as being relocated and a circuit connection is not shown or noted, this Contractor shall extend and connect the existing circuit as required.
2. In areas where the general construction work interrupts the continuity of an existing circuit, this Contractor shall relocate portion of the circuit required to maintain continuity.

D. Coordination: Coordinate all demolition work with the other trades and the Department.

3.4 EXISTING PANELBOARDS (Where Applicable)

A. Existing panelboards to remain or to be relocated:

1. Clean interiors and exteriors.
2. Inspect for damage. Notify Engineer if repairs are necessary or damaged components need replacing.
3. Tighten conduit and wire terminations in accordance with applicable codes.

B. Verify panelboards and panelboard feeders are of adequate capacity for loads to be served.

1. Activate loads connected to panelboards to achieve full load condition.
 2. Measure and record amperage readings of phase and neutral conductors of panelboard feeders.
 3. Provide typewritten report of recorded measurements to the Engineer for review.
- C. Provide new typewritten circuit directory.
- D. New circuit breakers for existing switchboards, panelboards or loadcenters shall match the existing circuit breaker type, manufacturer, and AIC rating. If the existing breaker type is no longer available, submit proposed substitution to Engineer for approval.

3.5 EXISTING WIRING

- A. Inspect existing wiring which is to be disturbed for damage. Repair or replace damaged wiring.
- B. Insure integrity of existing wiring insulation:
1. Megger wiring phase-to-phase, phase to neutral, phase to ground, and neutral to ground.
 2. Record megger results. Provide typewritten report of results to the Engineer for review.
 3. Repair defective insulation to a dielectric value equal to that of wire of the same type and age.
- C. Secure and label existing wiring which is to be disturbed.
- D. Tighten existing wiring terminations and connections in accordance with applicable codes.

3.6 EQUIPMENT CONNECTION

- A. Refer to Section 260510, Electrical Equipment Wiring, for mechanical equipment wiring requirements.
- B. Terminate all circuits feeding equipment or furniture in safety switch, receptacles or outlet as shown on the drawings or as directed by the Department.
- C. Each piece of equipment requiring electric service shall be provided with a finished outlet.
- D. Make final connections to each piece of equipment requiring electric service.
- E. The drawings show generally the location of electric service to each piece of equipment. However, this contractor shall secure detailed shop drawings showing dimensioned locations for electric service to each piece of equipment from various contractors supplying such equipment prior to roughing-in.
- F. This contractor will be required to relocate any misplaced outlet at his own expense if he fails to secure detailed shop drawings prior to roughing-in for equipment.

3.7 SPLICES

- A. Splices shall be made with approved type solder-less connectors of the insulated type. However, at locations where the non-insulated type are used, they shall be covered with rubber and friction tape to the same thickness as the original insulation of the wire used. Solder-less connections shall be as manufactured by AMP Incorporated, Thomas & Betts, Burndy or approved equal.

3.8 TERMINAL AND CONNECTORS

- A. All lugs, terminal blocks, etc. for panelboards, enclosed circuit breakers, switches, control centers, etc., shall be standard product as manufactured by AMP Incorporated, Thomas & Betts, Burndy or approved equal.

3.9 BALANCING

- A. Each system of feeder and branch circuits for power and lighting shall be connected to panelboard buses in such a manner that loads connected thereto will be balanced on all phases as closely as practicable. Should there be any unfavorable condition of balance on any part of the electrical system, the Electrical Contractor shall make changes to the electrical system that may be required by the Department to remedy the unbalanced condition. Should there be an unbalance on existing equipment, not included under this contract, the contractor shall report the unbalance to the Department so that the condition may be corrected by the Department under a separate contract. Before final acceptance by the Department, the contractor shall submit readings of all phase legs at each panel with the lighting and power circuits "on". All conductors for the system shall be connected in strict accordance with the requirements of the National Electrical Code.

3.10 PIPE CURBS; EQUIPMENT SUPPORTS AND FLASHING

- A. Coordinate installation of curbs, equipment supports, and flashing with the roofing work.
- B. Minimum curb and support height shall be 12 inches.
- C. Flash and counter flash where electrical conduit and equipment passes through weather or waterproofed walls, floors and roofs.

3.11 EXCAVATION AND BACKFILLING

- A. Refer to Division 31 for requirements.
- B. The contractor shall do all necessary excavating of widths and to depths required for the installation of manholes, box pads, concrete foundation slabs, for the installation of underground duct banks, and for the installation of other equipment and materials as shown on the drawings and herein specified.
- C. Final grading, finishing, paving and seeding at all excavated areas shall be included under this contract, except where new surfaces are being provided as a part of the site work under the

General Contract. The Electrical Contractor will be responsible for all backfilling and paving of roadways, sidewalks and other paved areas associated with this contract. All surfaces shall be restored to the satisfaction of the Department.

- D. Prior to submitting his bid price and prior to any work, the Electrical Contractor shall familiarize himself with local ordinances and amendments and shall contact the appropriate authorities to obtain all regulations and requirements that must be followed. The contractor shall secure all necessary permits before the start of any work.
- E. Conform to Act No. 287 of the General Assembly of the Commonwealth of Pennsylvania that was enacted to protect the public health and safety.
- F. The bottoms of all excavations shall be properly leveled off and concrete placed on undisturbed soil. All loose materials shall be removed and the excavations shall be brought into approved condition to receive concrete or other material. No earth filling shall be allowed under any bases or slabs. All excavation shall be carried down to firm formation. However, if additional depths are required to reach firm earth, the extra excavation and materials required to perform the work shall be done at no extra cost to the Department. If, through an error on the part of the contractor, any part of the excavation is carried below the depth indicated or required for the work, the contractor shall maintain the excavation and shall start concrete from the excavated level, and no extra compensation will be considered. Excavate and pour concrete only on the basis of approved shop drawings. Excavation below footings shall be filled with concrete as directed by the Department.
- G. Notify the Department as soon as excavations are completed, in order that the bearing quality of the bottoms may be inspected before concrete is poured, or before formwork is erected. Concrete shall be poured as soon as weather conditions permit after excavation is completed and inspected. In case bottoms of excavations become wet and soft, all soft material shall be removed and the concrete poured to the required extra depth, at no extra cost to the Department.
- H. Minimum cover for the various lines shall be not less than indicated on the drawings, but not less than local regulations and practice. Generally, piping shall be installed with not less than 3'-0" cover.
- I. The width of all trenches shall be not less than widths shown on the drawings or required to install piping and materials.
- J. The excavation shall be kept safe at all times. Shoring and sheathing shall be used when necessary. The excavation shall be kept free of water at all times. Additional shoring and sheathing may be ordered at any time to safeguard the work. Shoring and sheathing shall be provided in strict accordance with all applicable State, county and local ordinances and regulations.
- K. All excess excavated materials shall be disposed of as directed by the Department. The number of points at which the contractor will be permitted to work and length of open trenches that will be permitted will be governed by the Department.
- L. No existing asphalt or concrete paving shall be buried or otherwise disposed of on the site. It shall be disposed of off-site, by the contractor, in a manner consistent with applicable laws and regulations.

- M. To protect persons from injury and to avoid property damage, adequate barricades, construction signs, torches, red lanterns, and guards shall be placed and maintained during the progress of construction, and until it is safe for traffic use. Rules and regulations of the local authorities respecting safety provisions will be observed.
- N. Adequate protection shall be provided for all new or existing structures, services, or utilities encountered in the excavation. The protection shall include bracing, sheathing, supports, etc., as required to maintain grade and alignment and to provide proper mechanical strength. Any structures, services, or utilities damaged by the work of the contractor shall be promptly repaired and replaced in same condition as they originally were prior to such damage.
- O. Any existing services, utilities or other obstructions no longer required, shall be removed where encountered during the excavation.
- P. Excavation shall be conducted in a manner to cause the least interruption of traffic. Where traffic must cross open trenches, the contractor shall provide bridges suitable for the traffic involved.
- Q. The proposal shall include all excavation that may be necessary to complete the project, including any rock that may be encountered. No blasting of any kind will be permitted on the interior or exterior of the building.
- R. After the pipe or equipment has been laid, tested, inspected and concrete has been poured, cured and inspected, the excavation shall be backfilled by the contractor with the best carefully selected materials free from stones, large pebbles, hard lumps or frozen earth. The backfilling shall be placed in horizontal layers not to exceed 6" in thickness and each layer shall be thoroughly consolidated and compressed with pneumatic rammers. No backfilling shall be done until all undermined earth has been broken down and the sides of the excavation made vertical or inclined outward. New backfill shall be obtained on the site where necessary and where directed by the Department, or where necessary, backfill shall be hauled from off-site locations at no additional cost to the Department.
- S. Restore the surfaces of all excavations to their original condition. This shall include existing or new paved or unpaved streets, parking areas, driveways, sidewalks, and turf. Existing trees, shrubs, or turf damaged under this contract shall be replaced to the satisfaction of the Using Agency and the Department.
- T. As the work progresses, record on the drawings all changes and deviations from the contract drawings. Measurements shall include elevations and sufficient offset measurements from building to definitely locate all equipment and underground lines. Two prints of the marked drawings shall be delivered to the Department before final acceptance.
- U. Any settling, deterioration or washing out of earth or repaired surfaces after initial installation shall be corrected by this contractor.

3.12 FIELD QUALITY CONTROL

- A. Inspect installed components for damage and faulty work, including the following:
 - 1. Supporting devices for electrical components.

2. Concrete bases.
 3. Electrical demolition.
 4. Cutting and patching for electrical construction.
 5. Touchup painting.
- B. This Contractor shall furnish the services of an experienced superintendent who shall be constantly and continuously in charge of the installation of work.
- C. The quality of the workmanship required for this trade in the execution of its work shall be of the finest and highest obtainable in that trade working with materials specified. Workmanship shall be accomplished to the satisfaction of the Department.

3.13 CORE DRILLING

- A. This Contractor shall core drill holes associated with new feeders and branch circuits as indicated on the drawings.
- B. All core drillings shall be fire stopped/sealed after installation of conduits as hereinafter specified.
- C. This Contractor shall cover all equipment on the floor below core drillings. Any water or other damage shall be the responsibility of this Contractor to repair or replace without additional expense to the Department.

3.14 CUTTING AND PATCHING

- A. Refer to Division 1 - General Requirements.
- B. This Contractor shall be responsible for all cutting, patching, and finishing of existing construction for the proper installation of all electrical equipment and materials to be installed in the building. This will also be required for the removal of the existing equipment and materials. All cutting shall be kept to a minimum consistent with the requirements of the project. Cutting, patching, and finishing shall be done by workmen skilled in this type of work. All patching shall be done utilizing materials of the same quality and texture as the adjacent undisturbed areas perfectly and to the satisfaction of the Department. Painting of the final disturbed areas, where general construction work occurs, will be the responsibility of the General Contractor, unless otherwise indicated. Painting of the final finished areas, where no general construction work occurs, shall be by this Contractor. Be it walls or ceilings, paint entire plane in which damage occurs.
- C. No cutting shall be done which may affect the building structurally or architecturally without first securing the approval of the Department. Cutting shall be accomplished in such a manner as not to cause damage to the building or leave unsightly surfaces, which cannot be concealed by plates, escutcheons or other construction. Where such unsightly conditions are caused, this Contractor shall be required, at his own expense, to repair the damaged areas.

- D. Where openings are to be made in existing roof, obtain bonding company approval, if roof bond is still in effect, before such openings are made. Perform finishing and roof flashing, in areas of existing building or roof not being disturbed under general construction, for installation of work under Divisions 26, 27 and 28.
- E. Cutting of the construction excessively or carelessly done shall be repaired by this Contractor to match the original work and to the satisfaction of the Department who will make the final decision with respect to excessive or careless cutting work.
- F. This Contractor shall seal all openings he has made in plenum spaces, fire rated floors, ceilings or partitions after his work has been installed. The materials used for sealing the openings shall have a fire rating equal to or greater than the rating of the floor, ceiling or partition material.
- G. Where present equipment is removed and unused openings remain in walls, floors, partitions, etc., this Contractor shall properly patch all such openings. All patching and repairing shall be done by workmen skilled in this type of work and shall match present or new finishes.

3.15 CLEANING

- A. Refer to the General Conditions of the Contract.
- B. Prior to painting, clean as required to remove plaster, dirt, grease, dust, labels, burrs, etc.
- C. Prior to final inspection, the Contractor shall clean all equipment and surfaces within the scope of the project (for example: lighting fixtures, switch and receptacle plates, engine generators, electrical distribution equipment, etc.). In addition, the Contractor shall clean anything else that requires cleaning as a result of the Contractor's work.
- D. Any damage in the electrical system or other damage to any part of the building, its finish or furnishings, due to failure to properly clean electrical equipment and or associated components, shall be repaired by the Contractor with no additional cost to the Department.

3.16 REFINISHING AND TOUCH UP PAINTING

- A. Refinish and touch up paint.
 - 1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
 - 2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
 - 3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 4. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

- B. Conduit and equipment to be painted: Clean all conduit exposed to view in completed structure by removing plaster and dirt. Remove grease, oil and similar material from conduit and equipment by wiping with clean rags and suitable solvents in preparation for paint.

3.17 MOUNTING HEIGHTS

- A. In addition to careful review of the electrical drawings, this Contractor shall refer to all applicable details, plans, etc. and perform a site survey to determine exact positioning of electrical, telephone, data, television, video, etc. outlets prior to installations. Unless otherwise specifically instructed, centerline-mounting heights of outlets and other equipment shall be located as follows:
 - 1. Local Lighting Control Switches: Locate all outlets for single or gang switches 48" (top of box) above finish floor on strike side of door. If this location is such that it places the switch group partly in tiles or other finishes, the outlet shall be lowered sufficiently to bring the plate entirely on a flat surface (verify with Department before lowering outlet).
 - 2. Convenience Outlets: 18" above finished floor except as otherwise noted.
 - 3. Telecommunications Outlets: 18" above finished floor except as otherwise noted. Outlets for wall phones shall be located 60" above finished floor or as directed.
 - 4. CATV Outlets: 18" above finished floor except as otherwise noted. Coordinate locations for wall-mounted televisions with Architectural details and features.
 - 5. Outlets Above Countertops: 8" above top of counter without backsplash or 6" above top edge of backsplash except as otherwise noted.
 - 6. Blank Outlets: Coordinate location with served equipment manufacturers shop drawing and installation details for service connection point of access except as otherwise noted.
 - 7. Where similar types of outlets/devices are indicated on the drawings as being installed adjacent to each other on the same wall or in the same general area, but are indicated above as having different mounting heights, all similar outlets/devices shall be installed at the same mounting height. In such situations, confirm the mounting height with the Department.
 - 8. Fire Alarm Pull Stations: 48" above finished floor to top of box.
 - 9. Fire Alarm Audio/Visual and Visual Only Devices: The lower of 80" above finished floor (bottom of box) or 6" below ceiling (top of box).
 - 10. All fire alarm pull stations and audio/visual devices shall be installed on same vertical centerline.
 - 11. Safety Switches: 4' above finished floor, except as otherwise noted.
 - 12. Suspended Fixtures: As shown on drawings, as scheduled or as directed by the Department.

END OF SECTION 260500

SECTION 260519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Building wires rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.

1.3 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

1.6 COORDINATION

- A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Alcan Products Corporation; Alcan Cable Division.
 - 2. American Insulated Wire Corp.; a Leviton Company.
 - 3. General Cable Corporation.
 - 4. Senator Wire & Cable Company.
 - 5. Southwire Company.
- B. Copper Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.

2.2 CONNECTORS AND SPLICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Gedney; EGS Electrical Group LLC.
 - 4. 3M; Electrical Products Division.
 - 5. Tyco Electronics Corp.
- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-THWN, single conductors in raceway.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.

- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
- I. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- J. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls and ceilings unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

END OF SECTION 260519

SECTION 260526

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:
 - 1. Ground rods.
- C. Field quality-control test reports.

1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
 2. Stranded Conductors: ASTM B 8.
 3. Tinned Conductors: ASTM B 33.
 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches in cross section, unless otherwise indicated; with insulators.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad steel, sectional type; 3/4 inch by 10 feet in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Underground Grounding Conductors: Install bare copper conductor, No. 4/0 AWG minimum.
1. Bury at least 24 inches below grade.
 2. Duct-Bank Grounding Conductor: Bury 12 inches above duct bank when indicated as part of duct-bank installation.
- B. Grounding Bus: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
1. Install bus on insulated spacers 1 inch, minimum, from wall 6 inches above finished floor, unless otherwise indicated.

2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, down to specified height above floor, and connect to horizontal bus.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

- B. Ground Rods: Drive ground rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

- D. Grounding for Steel Building Structure: Install a driven ground rod at base of each corner column and at intermediate exterior columns at distances not more than 60 feet apart. Provide 4/0 AWG copper from in-slab rebar to each column as per NEC.

END OF SECTION 260526

SECTION 260529

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.

1.3 SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

1.5 COORDINATION

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. Thomas & Betts Corporation.
 - e. Unistrut; Tyco International, Ltd.
- 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 3. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
- 1. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Hilti Inc.
 - 3) MKT Fastening, LLC.
 - 2. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 - 3. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 - 4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 - 5. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with single-bolt conduit clamps.
- D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To New Concrete: Bolt to concrete inserts.
 - 2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 3. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 - 4. To Light Steel: Sheet metal screws.

3.3 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. FMC: Flexible metal conduit.
- D. IMC: Intermediate metal conduit.
- E. LFMC: Liquidtight flexible metal conduit.
- F. LFNC: Liquidtight flexible nonmetallic conduit.
- G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Allied Tube & Conduit; a Tyco International Ltd. Co.
 - 3. O-Z Gedney; a unit of General Signal.
 - 4. Wheatland Tube Company.
- B. EMT: ANSI C80.3.
- C. FMC: Zinc-coated steel.
- D. LFMC: Flexible steel conduit with PVC jacket.
- E. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 - 1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 - 2. Fittings for EMT: compression type.

2.2 NONMETALLIC CONDUIT AND TUBING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Lamson & Sessions; Carlon Electrical Products.
 - 3. RACO; a Hubbell Company.
 - 4. Thomas & Betts Corporation.
- B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.
- C. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
 - 1. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
- B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Severe Physical Damage: EMT.
 2. Branch circuits concealed in walls and above ceilings: EMT
 3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- H. Raceways Embedded in Slabs:
1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 3. Change from ENT to IMC before rising above the floor.
- I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

- K. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- L. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
 - 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 - 2. Where conduit pass from an unclassified space to a classified space.
 - 3. Where otherwise required by NFPA 70 (NEC 2005).
- M. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F, and that has straight-run length that exceeds 25 feet.
 - 1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:
 - a. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
 - 2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
 - 3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.
- N. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
 - 1. Use LFMC in damp or wet locations subject to severe physical damage.
 - 2. Use LFMC in damp or wet locations not subject to severe physical damage.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
 - 1. Excavate trench bottom to provide firm and uniform support for conduit.
 - 2. Install backfill as specified.
 - 3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction.
 - 4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.

5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose.
 - b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

3.4 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

3.5 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260553

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. Section Includes:
 - 1. Identification for raceways.
 - 2. Identification for conductors.
 - 3. Underground-line warning tape.
 - 4. Equipment identification labels.
 - 5. Miscellaneous identification products.

1.3 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.

1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 - PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage.
- C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.2 CONDUCTOR IDENTIFICATION MATERIALS

- A. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

2.3 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
 - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
 - 3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
- B. Color and Printing:
 - 1. Comply with ANSI Z535.1 through ANSI Z535.5.
 - 2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
 - 3. Inscriptions for Orange-Colored Tapes: COMMUNICATIONS CABLE.
- C. Tag: Type ID:

1. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core, bright-colored, continuous-printed on one side with the inscription of the utility, compounded for direct-burial service.
2. Overall Thickness: 5 mils.
3. Foil Core Thickness: 0.35 mil.
4. Weight: 28 lb/1000 sq. ft..
5. 3-Inch Tensile According to ASTM D 882: 70 lbf, and 4600 psi.

2.4 EQUIPMENT IDENTIFICATION LABELS

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
- F. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

- A. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - c. Colors for 480/277-V Circuits:
 - 1) Phase A: Brown.
 - 2) Phase B: Orange.
 - 3) Phase C: Yellow.
 - d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- B. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- C. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
 1. Limit use of underground-line warning tape to direct-buried cables.
 2. Install underground-line warning tape for both direct-buried cables and cables in raceway.
- D. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
 1. Labeling Instructions:
 - a. Indoor Equipment: Self-adhesive, engraved, melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.
 - b. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
 - c. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.
 2. Equipment to Be Labeled:

- a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be self-adhesive, engraved, laminated acrylic or melamine label.
- b. Enclosures and electrical cabinets.
- c. Switchboards.
- d. Transformers: Label that includes tag designation shown on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
- e. Enclosed switches.
- f. Enclosed controllers.
- g. Power transfer equipment.

END OF SECTION 260553

SECTION 262416

PANELBOARDS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. Section Includes:
 - 1. Distribution Panelboards.
 - 2. Lighting and appliance branch-circuit panelboards.

1.3 SUBMITTALS

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
 - 2. Time-current curves, including selectable ranges for each type of overcurrent protective device that allows adjustments.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.

- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with NEMA PB 1.
- E. Comply with NFPA 70.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Remove loose packing and flammable materials from inside panelboards; install temporary electric heating (250 W per panelboard) to prevent condensation.
- B. Handle and prepare panelboards for installation according to NEMA PB 1.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations:
 - 1. Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above panelboards is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
 - 2. Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - a. Ambient Temperature: Not exceeding 23 deg F to plus 104 deg F.
 - b. Altitude: Not exceeding 6600 feet.
- B. Service Conditions: NEMA PB 1, usual service conditions, as follows:
 - 1. Ambient temperatures within limits specified.
 - 2. Altitude not exceeding 6600 feet.

1.7 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Enclosures: Surface-mounted cabinets.
 - 1. Rated for environmental conditions at installed location.
 - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
 - 2. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
 - 3. Finishes:
 - a. Panels and Trim: Steel, factory finished immediately after cleaning and pretreating with manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat.
 - b. Back Boxes: Galvanized steel.
 - 4. Directory Card: Inside panelboard door, mounted in transparent card holder.
- B. Incoming Mains Location: Top and bottom.
- C. Phase, Neutral, and Ground Buses:
 - 1. Material: Tin-plated aluminum.
 - 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
- D. Conductor Connectors: Suitable for use with conductor material and sizes.
 - 1. Material: Tin-plated aluminum.
 - 2. Main and Neutral Lugs: Mechanical type.
 - 3. Ground Lugs and Bus-Configured Terminators: Mechanical type.
 - 4. Feed-Through Lugs: Mechanical type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
- E. Service Equipment Label: NRTL labeled for use as service equipment for panelboards or load centers with one or more main service disconnecting and overcurrent protective devices.
- F. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

- G. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: Circuit breaker or lugs only.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Mount top of trim 84inches above finished floor unless otherwise indicated.
- C. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- D. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.

- E. Install filler plates in unused spaces.
- F. Stub four 1-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch empty conduits into raised floor space or below slab not on grade.
- G. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.
- H. Comply with NECA 1.

3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.4 PROTECTION

- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

END OF SECTION 262416

SECTION 262726

WIRING DEVICES

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Snap switches.

1.3 DEFINITIONS

- A. Pigtail: Short lead used to connect a device to a branch-circuit conductor.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.6 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
 - 1. Cord and Plug Sets: Match equipment requirements and intended classification.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 3. Leviton Mfg. Company Inc. (Leviton).
 4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 5351 (single), 5352 (duplex).
 - b. Hubbell; HBL5351 (single), CR5352 (duplex).
 - c. Leviton; 5891 (single), 5352 (duplex).
 - d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.3 SNAP SWITCHES

- A. Comply with NEMA WD 1 and UL 20.
- B. Switches, 120/277 V, 20 A:
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
 - b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
 - c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
 - d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

2.4 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Material for Finished Spaces: Galvanized steel.
 3. Material for Unfinished Spaces: Galvanized steel.

- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, thermoplastic with lockable cover, rated weather-proof while in use.

2.5 FINISHES

- A. Color: Wiring device catalog numbers in Section Text do not designate device color.
 - 1. Wiring Devices Connected to Emergency Power System: Red.
 - 2. Isolated-Ground Receptacles: As specified above, with orange triangle on face.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
- B. Coordination with Other Trades:
 - 1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
 - 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 - 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
 - 1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
 - 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 - 3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
 - 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailling existing conductors is permitted provided the outlet box is large enough.
- D. Device Installation:
 - 1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.

2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

END OF SECTION 262726

SECTION 262816

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 STIPULATIONS

- A. Specification sections “General Conditions”, “Special Requirements”, and “General Requirements” form a part of this section by reference thereto and shall have the same force and effect as if printed herewith in full.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fusible switches.

1.3 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.
 - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
 - 4. Include evidence of NRTL listing for series rating of installed devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
 - 6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- D. Comply with NFPA 70.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 - 1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C).
 - 2. Altitude: Not exceeding 6600 feet (2010 m).

1.6 COORDINATION

- A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements :
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Type HD, Heavy Duty, Single Throw, 240 and 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.
- C. Accessories:
 - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 - 2. Lugs: Mechanical type, suitable for number, size, and conductor material.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Install fuses in fusible devices.
- C. Comply with NECA 1.

3.3 IDENTIFICATION

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
 - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION 262816

SECTION 265119

LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 STIPULATIONS

- A. The specification section "General Conditions of the Construction Contract ", "Special Conditions", and "Division 1 - General Requirements" form a part of this Section by this reference thereto, and shall have the same force and effect as if printed herewith in full.

1.2 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.
- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Arrange in order of luminaire designation.
 - 2. Include data on features, accessories, and finishes.
 - 3. Include physical description and dimensions of luminaires.
 - 4. Include emergency lighting units, including batteries and chargers.
 - 5. Include life, output (lumens, CCT, and CRI), and energy efficiency data.
 - 6. Photometric data.
 - a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - b. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- C. Qualification Data: For testing laboratory providing photometric data for luminaires.
- D. Seismic Qualification Certificates: For luminaires, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
- E. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- F. Product Certificates: For each type of luminaire.
- G. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.
 - 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.5 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.
- C. Provide luminaires from a single manufacturer for each luminaire type.
- D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.7 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Standards:
 - 1. ENERGY STAR certified.
 - 2. California Title 24 compliant.
 - 3. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.
 - 4. UL Listing: Listed for damp location.
- C. Internal driver.
- D. Nominal Operating Voltage: 120VAC.

2.2 MATERIALS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.
- B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- C. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter, shape, size, wattage, and coating.
 - c. CCT and CRI for all luminaires.

2.3 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.

2.4 LUMINAIRE SUPPORT

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: **1/2-inch (13-mm)** steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 gage.
- D. Rod Hangers: **3/16-inch (5-mm)** minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:

1. Sized and rated for luminaire weight.
2. Able to maintain luminaire position after cleaning and relamping.
3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and vertical force of 400 percent of luminaire weight.

E. Wall-Mounted Luminaire Support:

1. Attached to structural members in walls or attached to a minimum 20 gauge backing plate attached to wall structural members.

F. Suspended Luminaire Support:

1. Pendants and Rods: Where longer than **48 inches (1200 mm)**, brace to limit swinging.
2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.

G. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

3.5 STARTUP SERVICE

A. Comply with requirements for startup specified in Section 260943.16 "Addressable-Luminaire Lighting Controls."

B. Comply with requirements for startup specified in Section 260943.23 "Relay-Based Lighting Controls."

END OF SECTION 265119

SCHEDULE OF MATERIAL SUBMITTALS ELECTRICAL											DMVA PROJECT No. 42150101		PROJECT TITLE PRE-ENGINEERED STEEL STORAGE BLDG.							
TO BE COMPLETED BY PROJECT ENGINEER											TO BE COMPLETED BY CONTRACT ADMINISTRATOR									
LINE NUMBER	ITEM OR DESCRIPTION OF ITEM, CONTRACT REFERENCE, TYPE OF SUBMITTAL	NUMBER OF COPIES REQUIRED									REQUIRED SUBMISSION DATE	DATE RECEIVED IN CONTRACTING	DATE TO CIVIL ENGINEERING	RETURN SUSPENSE DATE	SUBMITTAL NUMBERS	DATE CONTRACTOR NOTIFIED		CONTRACTOR RESUBMITTAL	FINAL APPROVAL	REMARKS
		STEEL CERTIFICATE OF COMPLIANCE	SHOP DRAWINGS	SAMPLES	COLOR SELECTION	MANUFACTURER'S RECOMMENDATIONS	MANUFACTURER'S WARRANTY	CATALOG DATA	OPERATING INSTRUCTIONS	REPORTS						BATCH SLIPS	APPROVED			
1	260519 – Low-Voltage Electrical Power Conductors and Cables						6				NTP +10									
2	260526 – Grounding and Bonding for Electrical Systems						6				NTP +10									
3	260533 – Raceways and Boxes for Electrical Systems						6				NTP +10									
4	265199 – Interior LED Lighting					6	6				NTP +10									
5	262416 – Panel boards					6	6				NTP +10									
6	262726 – Wiring Devices			6			6				NTP +10									
7	262826 – Enclosed Switches and Circuit Breakers						6				NTP +10									
8	As-Built Drawings																			End of Project
9	O&M Manuals																			End of Project

* NOTE: This form is provided for your convenience and does not alleviate any requirements stated in the specifications.

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF GENERAL SERVICES

HARRISBURG, PENNSYLVANIA

TOM WOLF, GOVERNOR

CURT TOPPER, SECRETARY

UCC BUILDING APPROVAL

These plans are deemed in compliance with the Pennsylvania Construction Code Law (1999, November 10, P.L. 491, NO. 45) and its regulations.

Plan Code: **B** File Number: **528220** Permit Number: **201701322**
Constr Type: **2B** Story Height: **1** BSMT:

TYPE REV	BLDG	ELEC	MECH	PLUM	ENERGY	ACCESS
	X	X			X	X

Occupancy(s): **S2**
Fire Protection: **N** EL(Y)
Special Inspections: **N** Number of Sheets: **11**
Code Edition: 2009 / 2015
PRIMARY EXAMINER: **Zimmers, Anna L.** Date: **9/11/2017**

Anna L. Zimmers
"New STORAGE BLDG," (244)

PROJECT NO. D.G.S. A963-35 PRE-ENGINEERED STEEL STORAGE BLDG. SCRANTON / TAYLOR FMS TAYLOR, LACKAWANNA COUNTY, PENNSYLVANIA



INDUSTRIAL BOARD ORDER
MAILING DATE - 6/29/17

File 528220
6/28/17 K2
Inspector #244
IB-23390

DESIGN PROFESSIONALS
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
BLDG. 0-10, CHAPEL ROAD, FT. INDIANTOWN GAP
ANNVILLE, LEBANON COUNTY, PENNSYLVANIA



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF FACILITIES AND ENGINEERING/STATE ARMORY BOARD
BLDG. 0-10, FT INDIANTOWN GAP,
ANNVILLE, PA 17003-5902
Phone: (717) 861-8221

9 May, 2017

INDEX TO DRAWINGS

G.1 COVER SHEET
G.2 CODE INFORMATION

GENERAL CONSTRUCTION
CONTRACT NO. D.G.S. A963-35.1

ELECTRICAL CONSTRUCTION
CONTRACT NO. D.G.S. A963-35.4

CIVIL DWGS.
C.1.0 SITE PLAN

ELECTRICAL DWGS.
E.1.1 LIGHTING & POWER PLAN
ES.1.1 ELECTRICAL SITE PLAN

ARCHITECTURAL DWGS.
A.1.0 FLOOR PLAN
A.2.0 ELEVATIONS
A.3.0 SECTIONS & DETAILS
S.1.0 FOUNDATION

Mr. Raymond Fishburn
Department of Military and Veterans Affairs
Building 0-10 Chaple Road
Fort Indiantown Gap
Anncville, PA 17003

Re: National Guard Armory - Scranton
Storage Building
8 Stauffer Industrial Pike
Taylor, PA

Dear Mr. Fishburn:

At a meeting held on the 27th day of June 2017, the Industrial Board considered your request for a variance(s) from the Regulations promulgated under the Uniform Construction Code for the above-referenced building.

It was determined by the Industrial Board as follows:

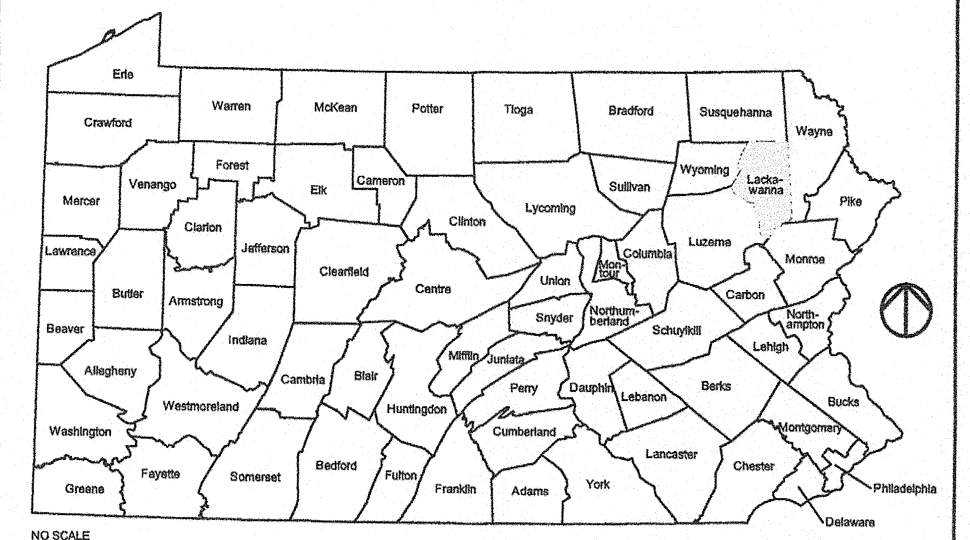
A variance is granted from Section 403.1 and Table 403.1 of the 2009 International Plumbing Code to waive the requirement of providing plumbing fixtures in the building, provided the building shall remain unoccupied and unheated.

Sincerely,
John J. McNulty
John J. McNulty
Chairman
Industrial Board

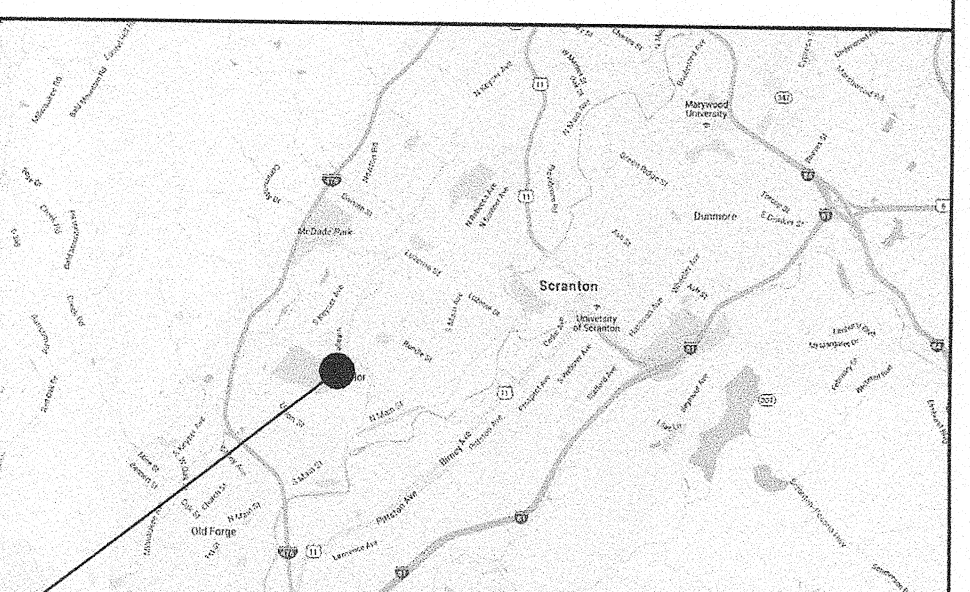
JJM/tw

CODE APPROVALS

PROJECT LOCATION MAP

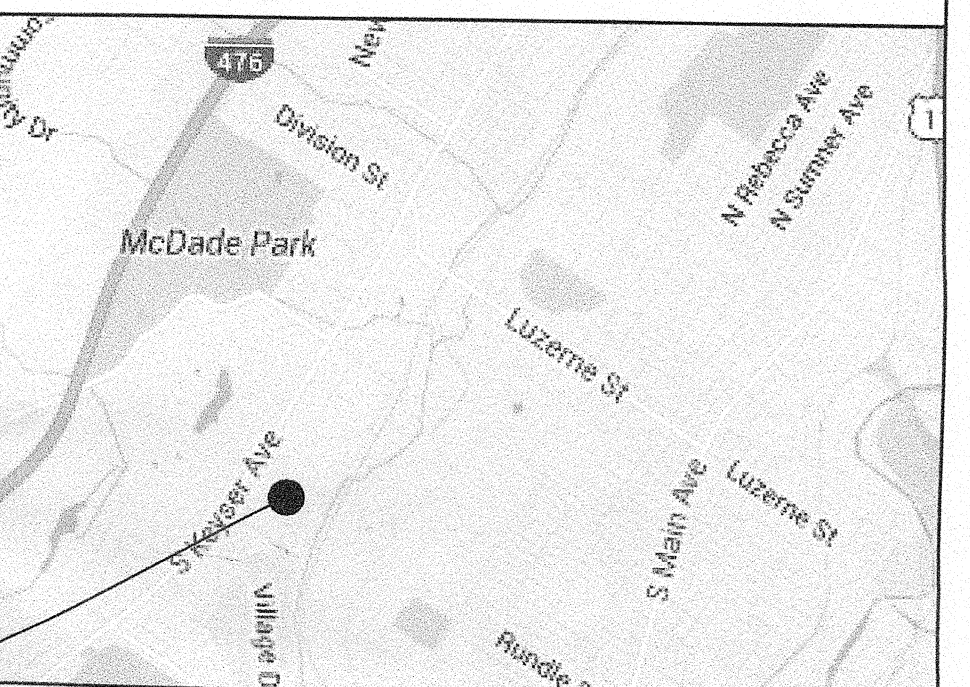


VICINITY MAP



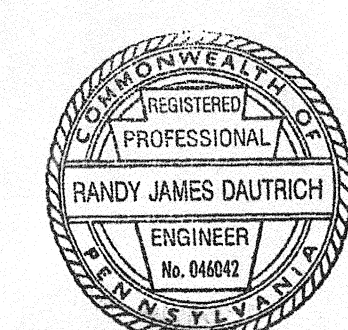
PROJECT SITE

CAMPUS / KEY PLAN

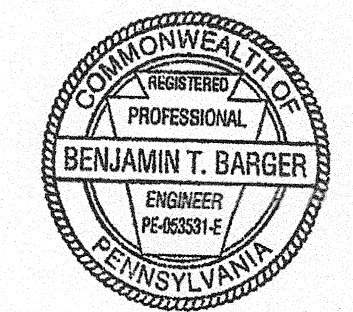


Drawings Listed In Index:

BEA Electronic Approval DATE



Randy James Dautrich
Professional's Signature Date



Benjamin T. Barger
Professional's Signature Date

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
BLDG. 0-10, FORT INDIANTOWN GAP
ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

PROJECT NO. D.G.S. **A963-35**
DMVA PROJECT NO. **42150101**

SCRANTON / TAYLOR FMS
PRE-ENGINEERED STEEL STORAGE BLDG.
LACKAWANNA COUNTY
TAYLOR, PA., 18517

COVER SHEET

DRAWN BY R. FISHBURN	DATE 30 MARCH-2017	DRAWING NO. G.1
CHECKED BY R. DAUTRICH	SCALE AS NOTED	

BUILDING CODE AND STANDARDS ANALYSIS


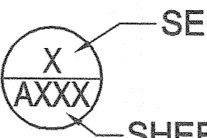
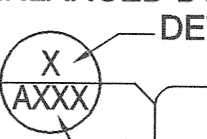
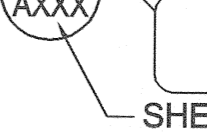
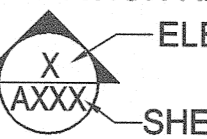
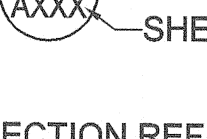

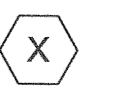

GENERAL INFORMATION:	
OCCUPANCY GROUP:	'S-2' STORAGE GROUP
TYPE OF CONSTRUCTION:	TYPE IIB
ALLOWABLE HEIGHT AND BUILDING AREA:	
ALLOWABLE HEIGHT:	2 STORIES
ACTUAL HEIGHT:	1 STORY
ALLOWABLE AREA:	17,500 SQ. FT.
ACTUAL AREA:	3696 SQ. FT.
FIRE RESISTANCE RATING REQUIRED FOR:	TYPE IIB
STRUCTURAL FRAME:	0 - HOUR
BEARING WALLS EXTERIOR:	0 - HOUR
BEARING WALLS INTERIOR:	0 - HOUR
NON-BEARING WALLS EXTERIOR:	0 - HOUR
NON-BEARING WALLS INTERIOR:	0 - HOUR
FLOOR CONSTRUCTION:	0 - HOUR
ROOF CONSTRUCTION:	0 - HOUR
MAXIMUM FLOOR ALLOWANCE PER OCCUPANT:	300 SQ. FT. PER OCCUPANT
ALLOWABLE OCCUPANT LOAD:	12
ACTUAL OCCUPANT LOAD:	UNOCCUPIED

EGRESS INFORMATION:	
IBC 1005.1 EGRESS WIDTH PER OCCUPANT:	0.2 INCHES PER OCCUPANT
BUILDING OCCUPANCY:	12 person @ 0.2 = 2.4 INCHES
ACTUAL EGRESS WIDTHS:	
MAIN ENTRANCE:	DOOR 101: 36 INCHES
REAR ENTRANCE:	DOOR 102: 36 INCHES
1021.1 NUMBER OF EXITS:	1-500 OCCUPANTS = 2 EXITS MINIMUM

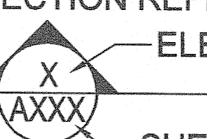
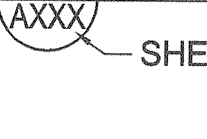


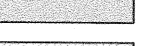

CODE AND STANDARD COMPLIANCE

- GENERAL BUILDING CODE:
A. INTERNATIONAL BUILDING CODE (2009)
- MECHANICAL:
A. INTERNATIONAL MECHANICAL CODE (2009)
B. INTERNATIONAL PLUMBING CODE (2009)
C. INTERNATIONAL FUEL GAS CODE (2009)
D. ASHRAE 90.1 - AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
- ELECTRICAL CODE:
A. NATIONAL ELECTRICAL CODE (2008)
B. INTERNATIONAL ENERGY CONSERVATION CODE (2009)
- FIRE AND SAFETY:
A. INTERNATIONAL FIRE CODE (2009)
B. NFPA 101, LIFE SAFETY CODE (2009)
C. OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
- TESTING AND MATERIALS:
A. ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
B. UL - UNDERWRITER LABORATORIES

SYMBOLS

- DETAIL REFERENCE
SECTION NUMBER  WALL REFERENCE
- SHEET NUMBER 
- ENLARGED DWG. REFERENCE
DETAIL NUMBER 
- SHEET NUMBER 
- ELEVATION REFERENCE
ELEVATION NUMBER 
- SHEET NUMBER 
- DOOR TYPE SYMBOL 
- DEMO NOTE 
- WALL ID SYMBOL 

LEGEND

- SECTION REFERENCE
ELEVATION NUMBER 
- SHEET NUMBER 
- EXISTING MASONRY WALL 
- NEW MASONRY WALL 
- NEW WALL 
- EXISTING PARTIAL WALL 

ARCHITECTURAL

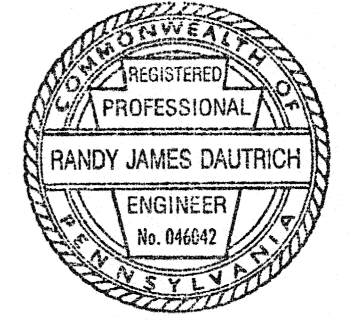
ABV	ABOVE	FAB	FABRICATE	PNL	PANEL
ADA	AMERICANS w/ DISABILITIES ACT	FBD	FIBERBOARD	PNT	PAINT
ACST	ACOUSTIC	FF	FINISHED FLOOR	PORC	PORCELAIN
ADDL	ADDITIONAL	FIN	FINISH	PR	PAIR
ADJ	ADJACENT	FL	FLASHING	PROJ	PROJECT
A & E	ARCHITECTURAL & ENGINEERING	FLEX	FLEXIBLE	PT	POINT
AFF	ABOVE FINISHED FLOOR	FLG	FLANGE	PTD	PAINTED
AL	ALUMINUM	FLR	FLOOR	PTN	PARTITION
ALT	ALTERNATE	FLRG	FLOORING	R	RADIUS
ARCH	ARCHITECTURAL	FRP	FIBERGLASS-REINFORCED PLASTIC	RS	RISER
ASB	ASBESTOS	FT	FOOT	REFRGR	REFRIGERATOR
ASSOC	ASSOCIATION	FTG	FOOTING	REINF	REINFORCED
ASST	ASSISTANT	FURN	FURNITURE	REQD	REQUIRED
ASSY	ASSEMBLY	GAR	GARAGE	REV	REVISION
AVG	AVERAGE	GL	GLASS	RFG	ROOFING
B	BOTTOM	GRD	GROUND	RH	RIGHT HAND
BALC	BALCONY	GWB	GYP SUM WALLBOARD	RM	ROOM
BD	BOARD	GYP	GYP SUM	S	SOUTH
BETW	BETWEEN	H	HIGH	SCHD	SCHEDULE
BLDG	BUILDING	HDWE	HARDWARE	SDG	SIDING
BP	BASE PLATE	HM	HOLLOW METAL	SEC	SECTION
BS	BOTH SIDE	HORIZ	HORIZONTAL	SF	SQUARE FOOT
BSMT	BASEMENT	HT	HEIGHT	SHT	SHEET
CAB	CABINET	ID	INSIDE DIAMETER	SIM	SIMILIAR
CAP	CAPACITY	IN	INCHES	SKY	SKYLIGHT
CARP	CARPET	INSUL	INSULATION	SLDR	SLIDING DOOR
CDR	COILING DOOR	INTR	INTERIOR	SMLS	SEAMLESS
CER	CERAMIC	LAB	LABORATORY	SPEC	SPECIFICATION
CER TILE	CERAMIC TILE	LAM	LAMINATE	SPKR	SPEAKER
CL	CENTER LINE	LF	LINEAR FOOT	SQ	SQUARE
CLG	CEILING	LG	LENGTH	SS	STAINLESS STEEL
CLO	CLOSET	LH	LEFT HAND	STD	STANDARD
CNCL	CONCEALED	LIB	LIBRARY	STOR	STORAGE
CO	COMPANY	LIN	LINEAR	STWY	STAIRWAY
COMP	COMPOSITION	LT	LIGHT	SUPT	SUPERINTENDENT
CRV	CURVED	MAINT	MAINTENANCE	SUPVR	SUPERVISOR
CTD	COATED	MATL	MATERIAL	SURF	SURFACE
CTR	CENTER	MAX	MAXIMUM	SUSP	SUSPENDED/SUSPENSION
DBL	DOUBLE	MEMB	MEMBRANE	SYS	SYSTEM
DEG	DEGREE	MEZZ	MEZZANINE	T	TREAD
DEPT	DEPARTMENT	MFR	MANUFACTURER	T & B	TOP & BOTTOM
DET	DETAIL	MGR	MANANGER	T & G	TONGUE & GROOVE
DIA	DIAMETER	MIN	MINIMUM	TAN	TANGENT
DIM	DIMENSION	MISC	MISCELLANEOUS	TEMP	TEMPORARY
DIV	DIVISION	MET	METAL	TER	TERRAZZO
DN	DOWN	MLDG	MOLDING	THRU	THROUGH
DR	DOOR	MTG	MOUNTING	TRTD	TREATED
DS	DOWN SPOUT	N	NORTH	TYP	TYPICAL
DW	DISHWASHER	NA	NOT APPLICABLE	UNO	UNLESS NOTED OTHERWISE
DWG	DRAWING	NIC	NOT IN CONTRACT	VCT	VINYL COMPOSITE TILE
E	EAST	NO	NUMBER	VERT	VERTICAL
EA	EACH	NRC	NOISE REDUCTION	W	WEST
ELEV	ELEVATOR	NTS	NOT TO SCALE	W	WIDTH
ENTR	ENTRANCE	OA	OVERALL	W/	WITH
EQ	EQUAL	OC	ON CENTER	W/O	WITHOUT
EQUIP	EQUIPMENT	OD	OUTSIDE DIAMETER	WBD	WALLBOARD
EXIST	EXISTING	OFC	OFFICE	WD	WOOD
EXP	EXPANSION	OHDR	OVERHEAD DOOR	WWF	WELDED WIRE FABRIC
EXT	EXTERIOR	OPNG	OPENING	YD	YARDS
		OPP	OPPOSITE		
		PLYWD	PLYWOOD		

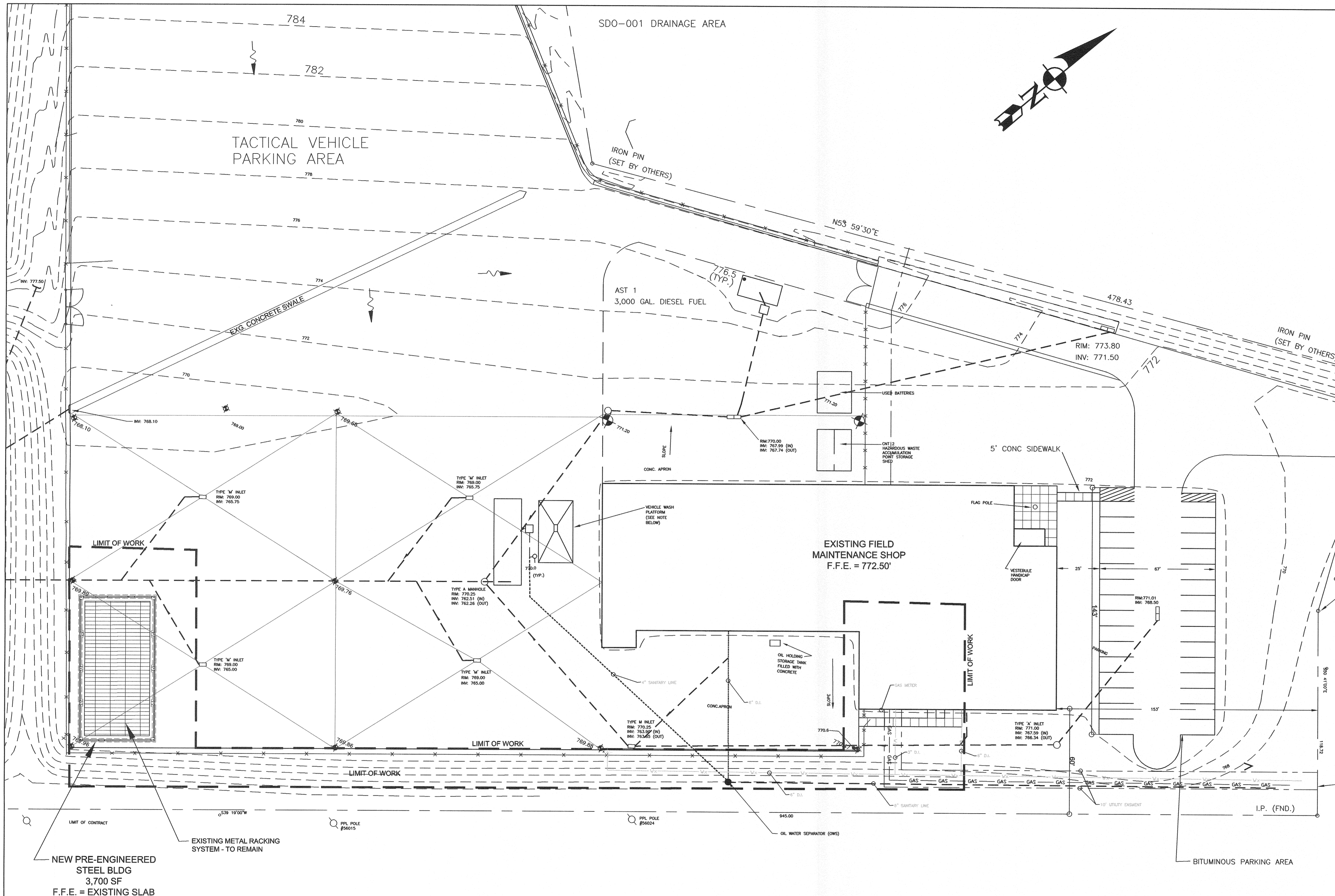
GENERAL NOTES

- CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND DIMENSIONS AND REPORT DISCREPANCIES TO GOVERNMENT DESIGN PROFESSIONAL PRIOR TO COMMENCEMENT OF WORK.
- EXTERIOR DIMENSIONS SHOWN ON DRAWINGS ARE FINISHED FACE TO FINISHED FACE, UNLESS DEPICTED OTHERWISE.
- INTERIOR DIMENSIONS SHOWN ON DRAWINGS ARE CENTER OF WALL TO CENTER OF WALL, UNLESS DEPICTED OTHERWISE.
- DETAILS ARE TYPICAL AND SHOW COMMON PRACTICE. CONTRACTOR SHALL INCORPORATE THESE DETAILS INTO THE PROJECT AT APPROPRIATE LOCATIONS WHERE CONDITIONS ARE SIMILIAR AND WHETHER SPECIFICALLY INDICATED OR NOT.
- DRAWINGS DEPICT COMMON PRACTICES AND ARE DIAGRAMMATIC, CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL NECESSARY COMPONENTS NEEDED FOR A COMPLETE AND FUNCTIONAL FACILITY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL APPLICABLE CODE REGULATIONS. ASPECTS NOT DETAILED WITHIN THE DESIGN DOCUMENTS SHALL BE INCORPORATED AS NECESSARY TO MEET ALL GOVERNING CODE REQUIREMENTS.
- GENERAL ("PRIME") CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK WITH THAT OF ALL OTHER TRADES.

DRAWING INTERPRETATION

DETAILS INDICATED ON THE DRAWINGS, BOTH TYPICAL (TYP.) AND SPECIFIC, SHALL APPLY TO ALL SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY DETAILED. THE APPLICABILITY OF THE DETAIL TO ITS LOCATION ON THE PLANS CAN BE DETERMINED BY THE TITLE OF THE DETAIL. SUCH DETAILS SHALL APPLY WHETHER OR NOT THEY ARE KEYED AT EACH LOCATION. DECISIONS REGARDING THE APPLICABILITY OF DETAILS SHOWN SHALL BE DETERMINED BY THE GOVERNMENT DESIGN PROFESSIONAL AND/OR THE GOVERNMENT CONSTRUCTION MANAGEMENT SPECIALIST.

1	CHANGED OCCUPANCY GROUP TO 'S2' FROM 'S1'	8/10/17
NO.	DESCRIPTION	DATE
REVISIONS		
 <i>Randy Dautrich</i> 8/10/17 Professional's Signature Date		
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF MILITARY AND VETERANS AFFAIRS BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING BLDG. 0-10, FORT INDIANTOWN GAP ANNVILLE, LEBANON COUNTY, PENNSYLVANIA		
COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF GENERAL SERVICES HARRISBURG, PENNSYLVANIA		
PROJECT NO. D.G.S.		A963-35
DMVA PROJECT NO.		42150101
SCRANTON / TAYLOR FMS PRE-ENGINEERED STEEL STORAGE BLDG. 8 STAUFFER INDUSTRIAL PARK TAYLOR, LACKAWANNA CO., PA.		
CODE INFORMATION		
DRAWN BY	DATE	DRAWING NO.
R. FISHBURN	30-MARCH-2017	G.2
CHECKED BY	SCALE	
R. DAUTRICH	AS NOTED	



SITE / CIVIL LEGEND		
EXISTING	PROPOSED	
450	450	CONTOUR LINE
SS	SS	SANITARY SEWER
W	W	WATER LINE
E	E	ELECTRIC - UNDERGROUND
E	E	ELECTRIC - OVERHEAD
F	F	FENCELINE
C	C	COMMUNICATION - UNDERGROUND
P	P	PROPANE
S	S	STORM SEWER
WV	WV	WATER VALVE
MH	MH	MANHOLE
SE	SE	SPOT ELEVATION
BE	BE	BENCHMARK ELEVATION
FA	FA	FLOW ARROW
UP	UP	UTILITY POLE
FD	FD	FIRE HYDRANT
CH	CH	CONCRETE HATCH
T	T	TREE
PLA	PLA	POLE MOUNTED AREA LIGHTING
PSGR	PSGR	PENNDOT STANDARD GUIDE RAIL
WCS	WCS	WATERLINE CURB STOP
SI	SI	STORM INLET
SYCO	SYCO	SANITARY YARD CLEAN OUT
ET	ET	ELECTRICAL TRANSFORMER W/ VAULT
G	G	GENERATOR
CM	CM	COMMUNICATIONS MANHOLE
EB	EB	ELECTRIC PULL-BOX
B	B	BOLLARD

NEW SITE & UTILITY PLAN
 SCALE: 1" = 30'
 SCALE IN FEET 30' 15' 0' 30' 60'

- GENERAL NOTES:**
- EXISTING SITE DATA WAS PROVIDED BY A PLAN TITLED "SITE DEVELOPMENT PLAN", DATED JANUARY 1997, FOR THE COMMONWEALTH OF PENNSYLVANIA, BY ALBERT E. PETERS ASSOC. INC. A TITLE SEARCH WAS NOT ACCOMPLISHED IN THE PREPARATION OF THIS PLAN.
 - THE CONTRACTOR IS RESPONSIBLE TO COMPLETE A "PA ONE CALL" TO VERIFY LOCATION OF ALL EXISTING UTILITIES PRIOR TO START OF EXCAVATION OPERATIONS.
 - THE CONTRACTOR IS RESPONSIBLE TO REPLACE, AT NO ADDITIONAL COST TO THE GOVERNMENT, ANY AND ALL EXISTING FACILITIES DAMAGED OR DESTROYED DURING THE CONSTRUCTION OF THIS PROJECT, EXCEPT THOSE IDENTIFIED TO BE DEMOLISHED AND REMOVED AS PART OF THIS PROJECT.

CALL BEFORE YOU DIG!
 PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE - STOP CALL
 POCS SERIAL NUMBER

VERIFY SCALE
 BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING.
 0 1
 IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

NO.	DESCRIPTION	DATE
REVISIONS		

Randy James Dautrich 4/4/17
 Professional's Signature Date

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
 BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
 BLDG. 0-10, FORT INDIANTOWN GAP
 ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

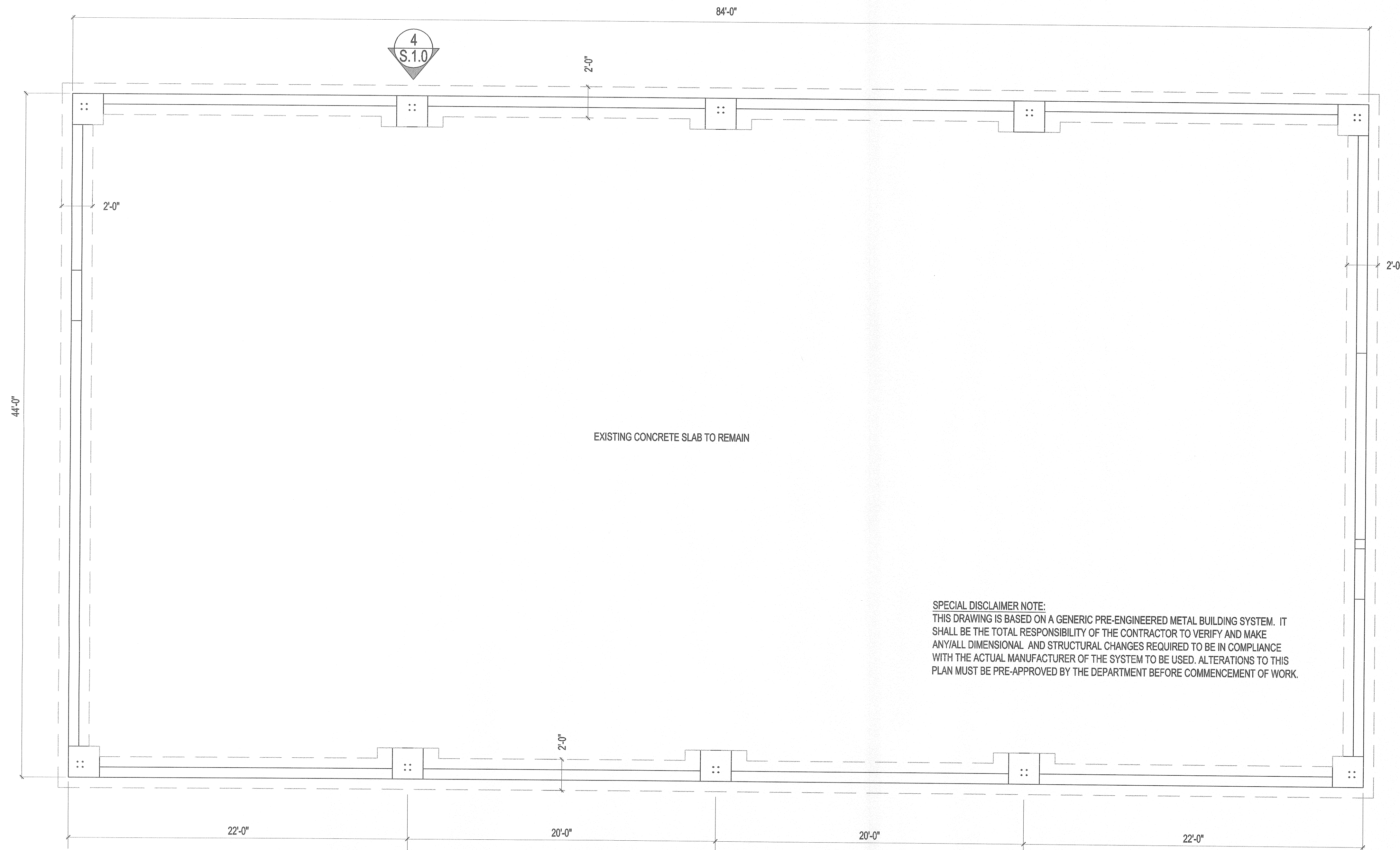
COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF GENERAL SERVICES
 HARRISBURG, PENNSYLVANIA

PROJECT NO. D.G.S. **A963-35**
 DMVA PROJECT NO. 42150101

SCRANTON / TAYLOR F.M.S.
 PRE-ENGINEERED STEEL STORAGE BLDG.
 8 STAUFFER INDUSTRIAL PARK
 TAYLOR, LACKAWANNA CO., PA

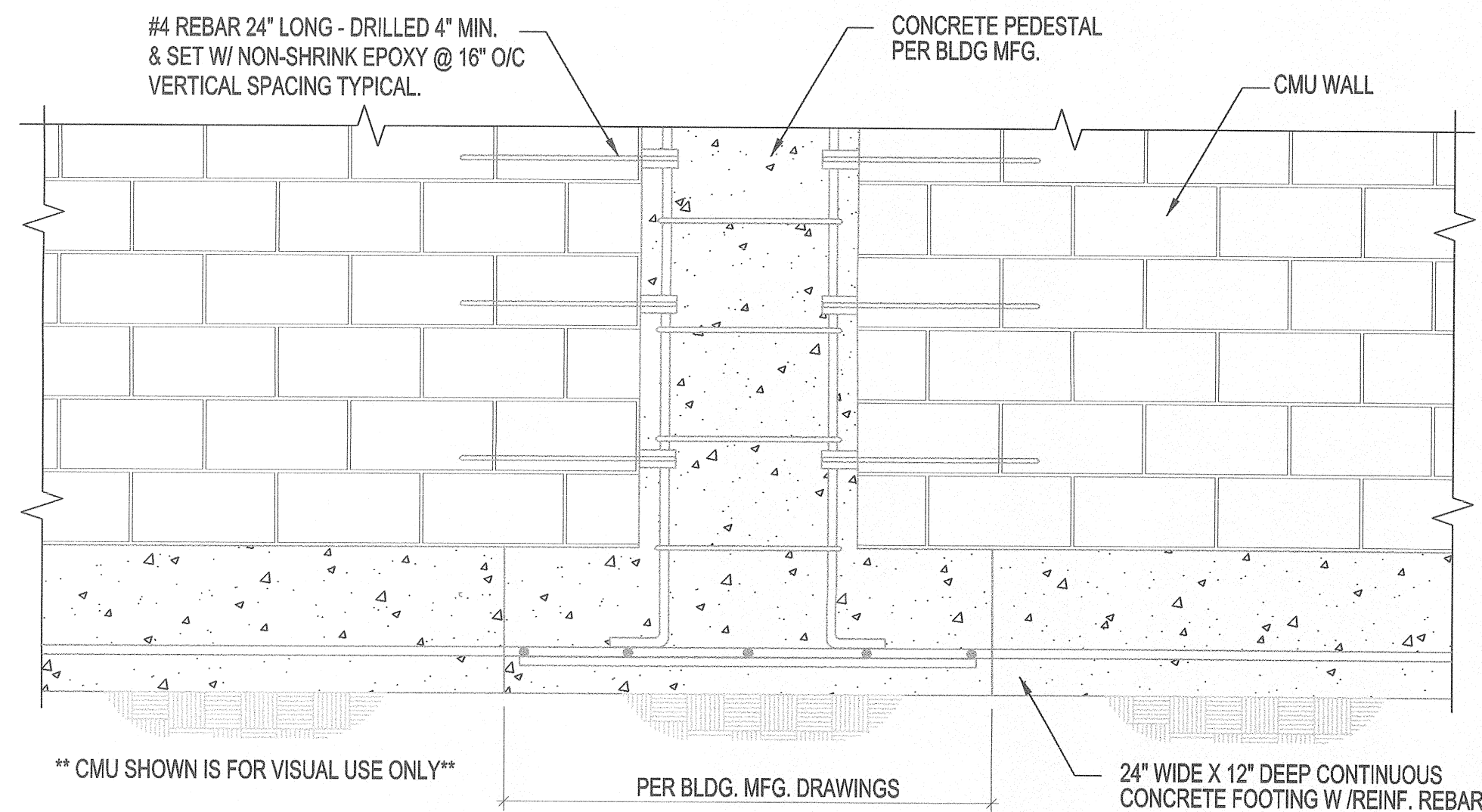
SITE PLAN

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT BUREAU OF ENGINEERING AND ARCHITECTURE APPROVAL.	DRAWN BY K. LLOYD	DATE 30 MAR 2017	DRAWING NO. C.1.0
	CHECKED BY R. DAUTRICH	SCALE AS NOTED	

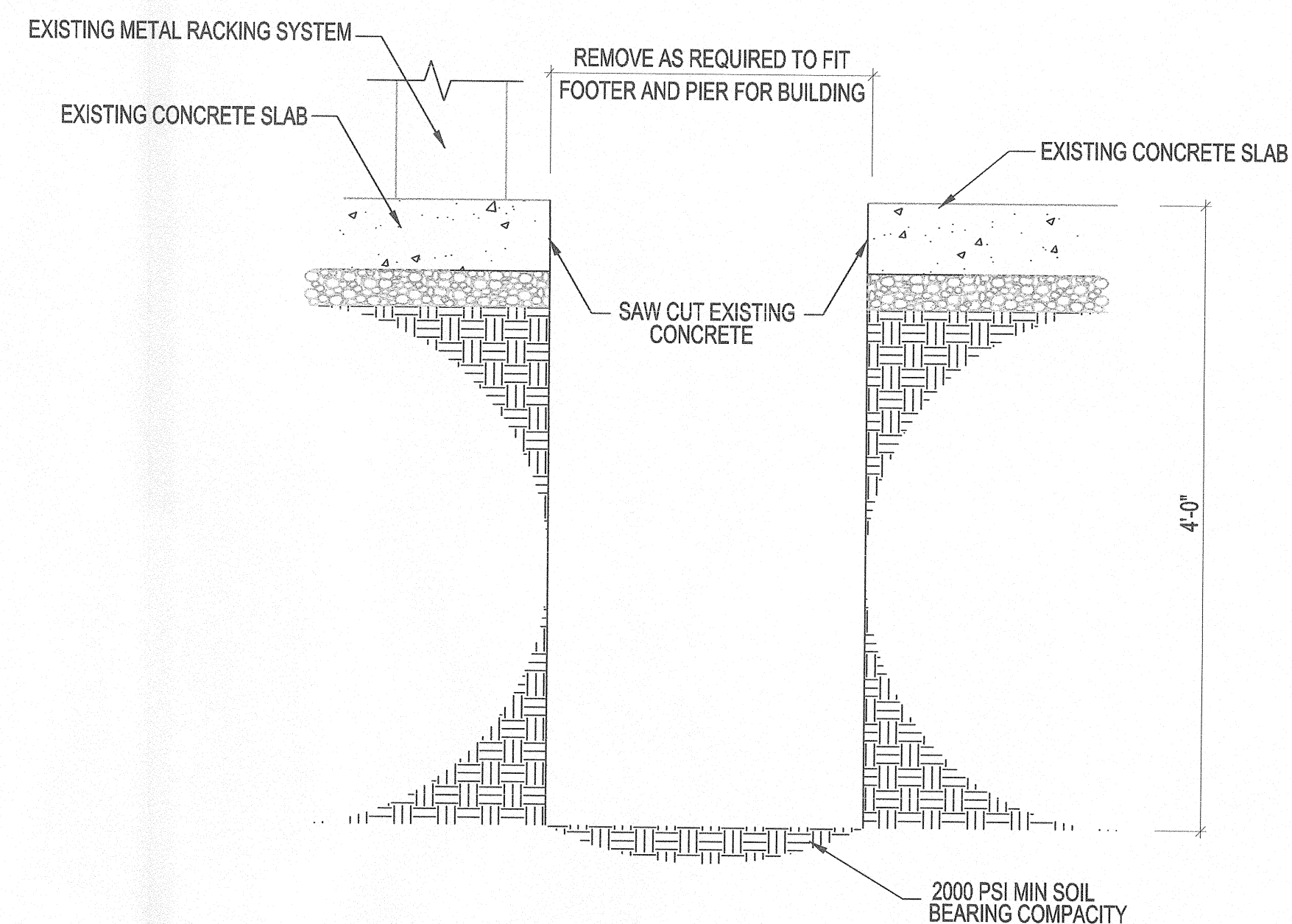


SPECIAL DISCLAIMER NOTE:
 THIS DRAWING IS BASED ON A GENERIC PRE-ENGINEERED METAL BUILDING SYSTEM. IT SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND MAKE ANY ALL DIMENSIONAL AND STRUCTURAL CHANGES REQUIRED TO BE IN COMPLIANCE WITH THE ACTUAL MANUFACTURER OF THE SYSTEM TO BE USED. ALTERATIONS TO THIS PLAN MUST BE PRE-APPROVED BY THE DEPARTMENT BEFORE COMMENCEMENT OF WORK.

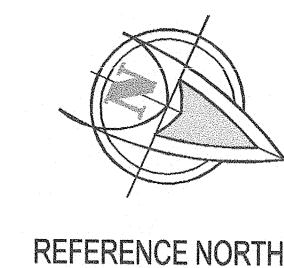
FOUNDATION PLAN 3693 SQ. FT.
 SCALE: 1/4" = 1'-0"



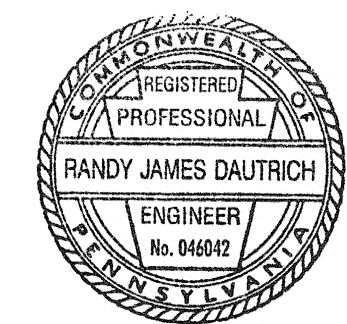
TYP. PIER CONNECTION
 SCALE: 3/4" = 1'-0"



EXCAVATED AREA DETAIL
 SCALE: 3/4" = 1'-0"



NO.	DESCRIPTION	DATE
REVISIONS		



Randy James Dautrich
 Professional's Signature Date

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
 BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
 BLDG. 0-10, FORT INDIANTOWN GAP
 ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF GENERAL SERVICES
 HARRISBURG, PENNSYLVANIA

PROJECT NO. D.G.S. A963-35
 DMVA PROJECT NO. 42150101

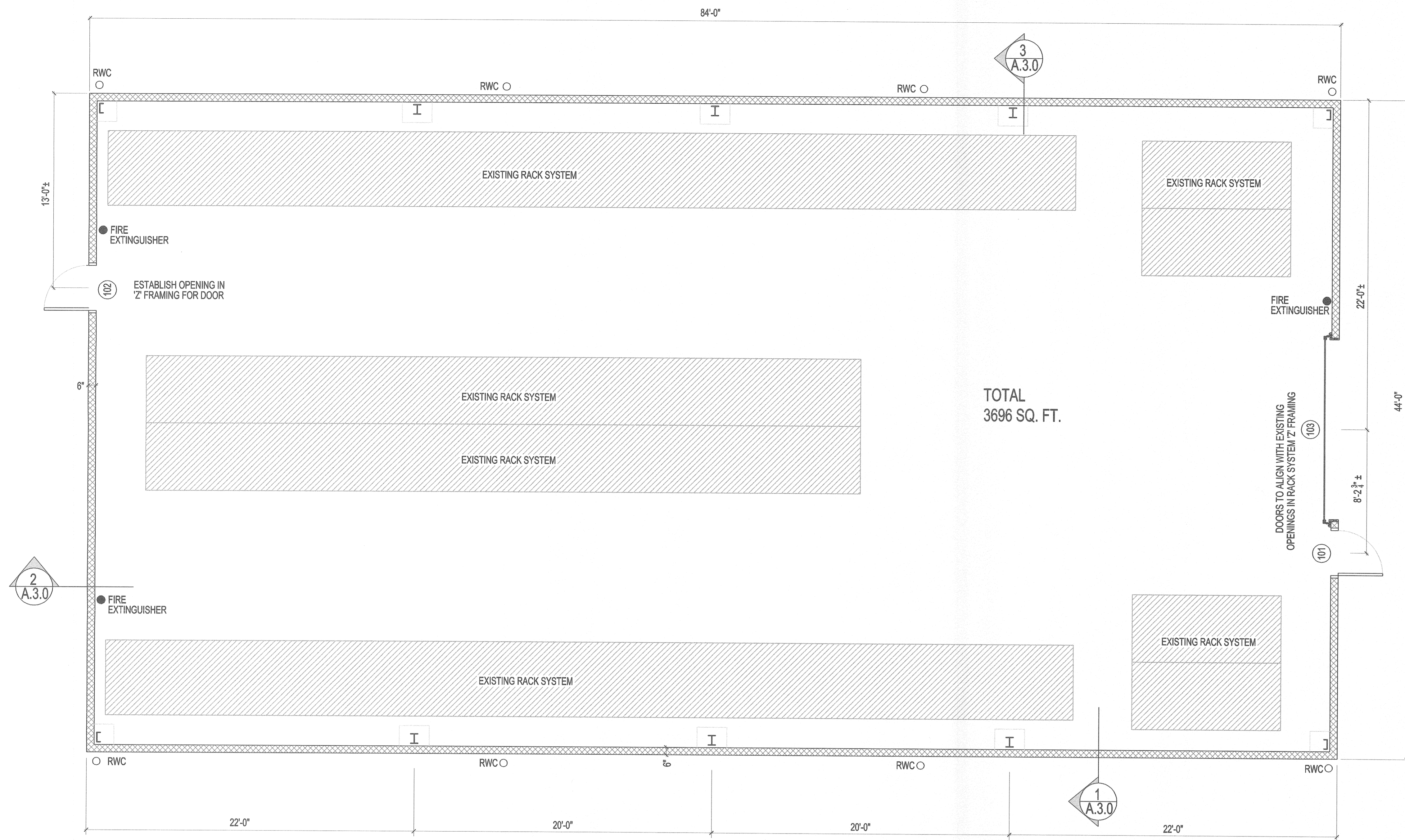
SCRANTON / TAYLOR FMS
 PRE-ENGINEERED STEEL STORAGE BLDG.
 8 STAUFFER INDUSTRIAL PARK
 TAYLOR, LACKAWANNA CO., PA

FOUNDATION PLAN

DRAWN BY R. FISHBURN	DATE 30-MARCH-2017	DRAWING NO. S.1.0
CHECKED BY R. DAUTRICH	SCALE AS NOTED	

GENERAL NOTES:

1. ALL CONTRACTORS SHALL BE AWARE OF THE FACT THAT ALL DRAWINGS PROVIDED FOR THIS PROJECT ARE DIAGRAMMATIC IN NATURE AND REQUIRES FIELD VERIFICATION FOR ACTUAL SITE CONDITIONS THAT WILL AFFECT PROJECT EXECUTION, EXACT QUANTITIES AND DETAILS. THIS DRAWING SHALL NOT BE SCALED FOR DIMENSIONS AND/OR DISTANCES.
2. PERFORM ALL WORK IN COMPLIANCE WITH THE APPLICABLE CODES AND STANDARDS.
3. ANY MODIFICATIONS TO THE DESIGN OR COMPONENTS OF THIS BUILDING THAT MAY AFFECT ITS STRUCTURAL INTEGRITY SHALL BE REVIEWED AND APPROVED BY A PROFESSIONAL ENGINEER PRIOR TO CONSTRUCTION.
4. THE JOB SITE SHALL BE MAINTAINED IN A REASONABLY NEAT AND ORDERLY CONDITION AND KEPT FREE FROM ACCUMULATIONS OF WASTE MATERIALS AND RUBBISH DURING THE ENTIRE CONSTRUCTION PERIOD.
5. ALL CONTRACTORS SHALL COORDINATE THEIR WORK AND COOPERATE WITH OTHER TRADES.
6. THE CONTRACTORS SHALL BE RESPONSIBLE COORDINATING & INSTALLING ALL NECESSARY BLOCKING, SHIMS, AND BACKING FOR FIXTURES, EQUIPMENT AND ACCESSORIES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONNECTIONS - UNLESS NOTED ON DRAWING OR IN SPECIFICATIONS.
8. C.M.U. HATCHING ON DRAWING MAY NOT REPRESENT THE ACTUAL LOCATION OF BLOCK COURSING.
9. ALL ROOF FRAMING ON EXISTING RACKING SYSTEM MUST BE REMOVED PRIOR TO CONSTRUCTION OF PRE-ENGINEERED STEEL BUILDING
10. DOORS 101 AND 103 MUST ALIGN WITH THE EXISTING OPENING IN 'Z' FRAMING ON THE RACK SYSTEM ON THE NORTH SIDE



TOTAL
3696 SQ. FT.

FLOOR PLAN

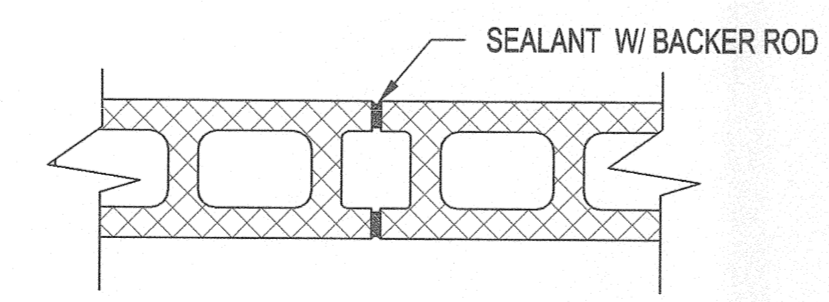
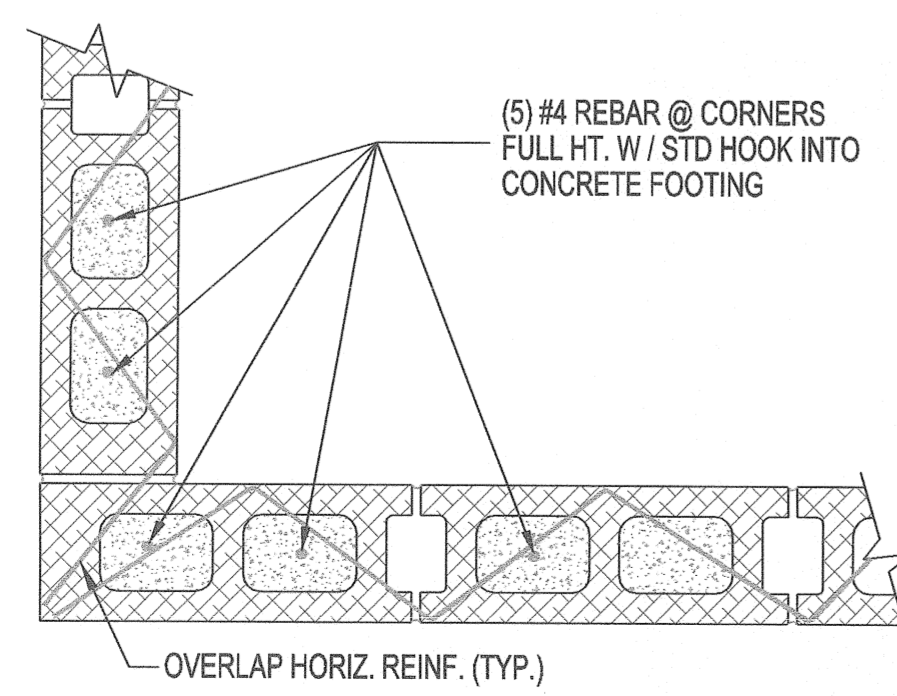
3696 SQ. FT.

SCALE: 1/4" = 1'-0"

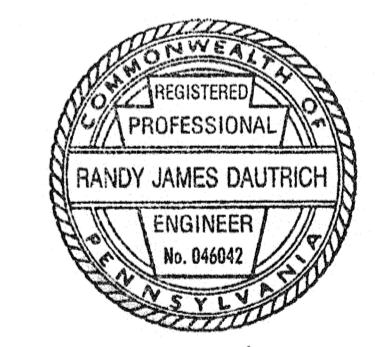
SPECIAL DISCLAIMER NOTE:
THIS DRAWING IS BASED ON A GENERIC PRE-ENGINEERED METAL BUILDING SYSTEM. IT SHALL BE THE TOTAL RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND MAKE ANY/ALL DIMENSIONAL AND STRUCTURAL CHANGES REQUIRED TO BE IN COMPLIANCE WITH THE ACTUAL MANUFACTURER OF THE SYSTEM TO BE USED. ALTERATIONS TO THIS PLAN MUST BE PRE-APPROVED BY THE DEPARTMENT BEFORE COMMENCEMENT OF WORK.

LEGEND

- MASONRY WALL
- CONCRETE
- GROUT, GYPSUM SHEETING
- STEEL
- STONE, GRAVEL FILL
- EARTH
- FIBERGLASS INSULATION
- DOOR NUMBER
- SECTION NUMBER SHEET NUMBER
- DETAIL NUMBER SHEET NUMBER



NO.	DESCRIPTION	DATE
REVISIONS		



Randy J. Dautrich 9/2/17
Professional's Signature Date

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
BLDG. 0-10, FORT INDIANTOWN GAP
ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

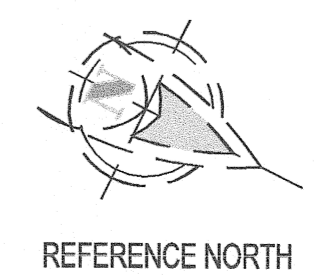
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

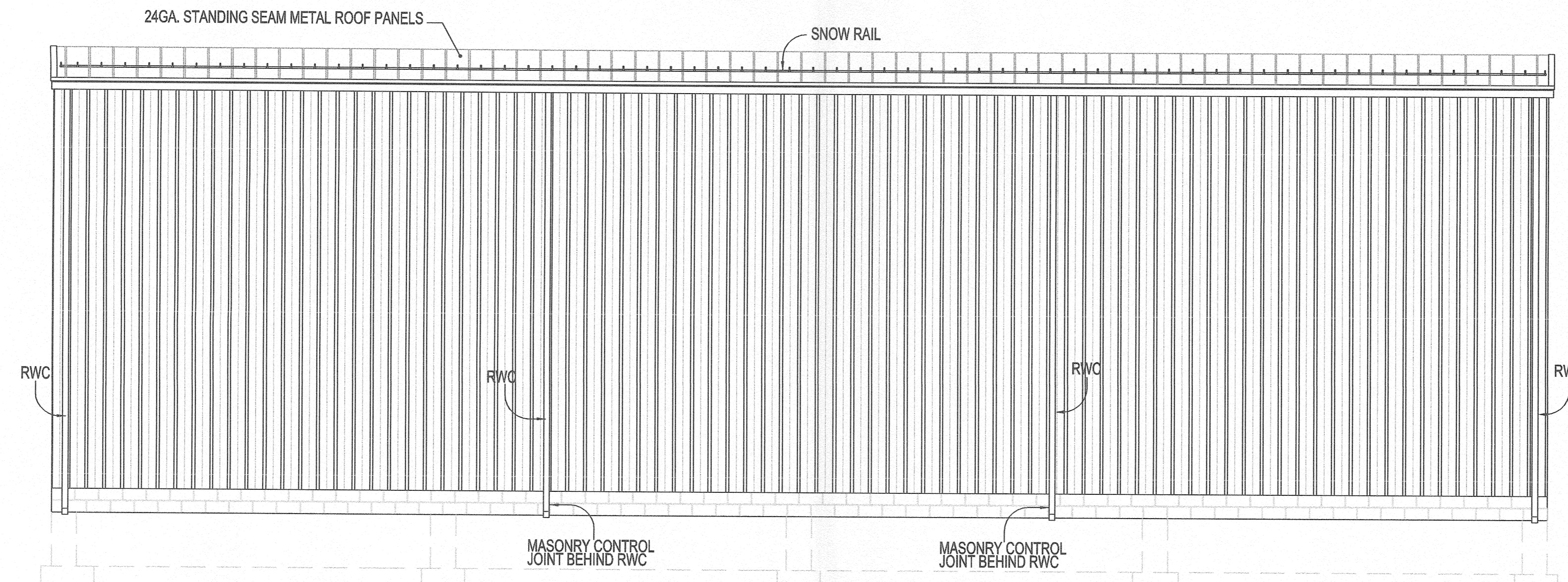
PROJECT NO. D.G.S. A963-35
DMVA PROJECT NO. 42150101

SCRANTON / TAYLOR FMS
PRE-ENGINEERED STEEL STORAGE BLDG.
8 STAUFFER INDUSTRIAL PARK
TAYLOR, LACKAWANNA CO., PA

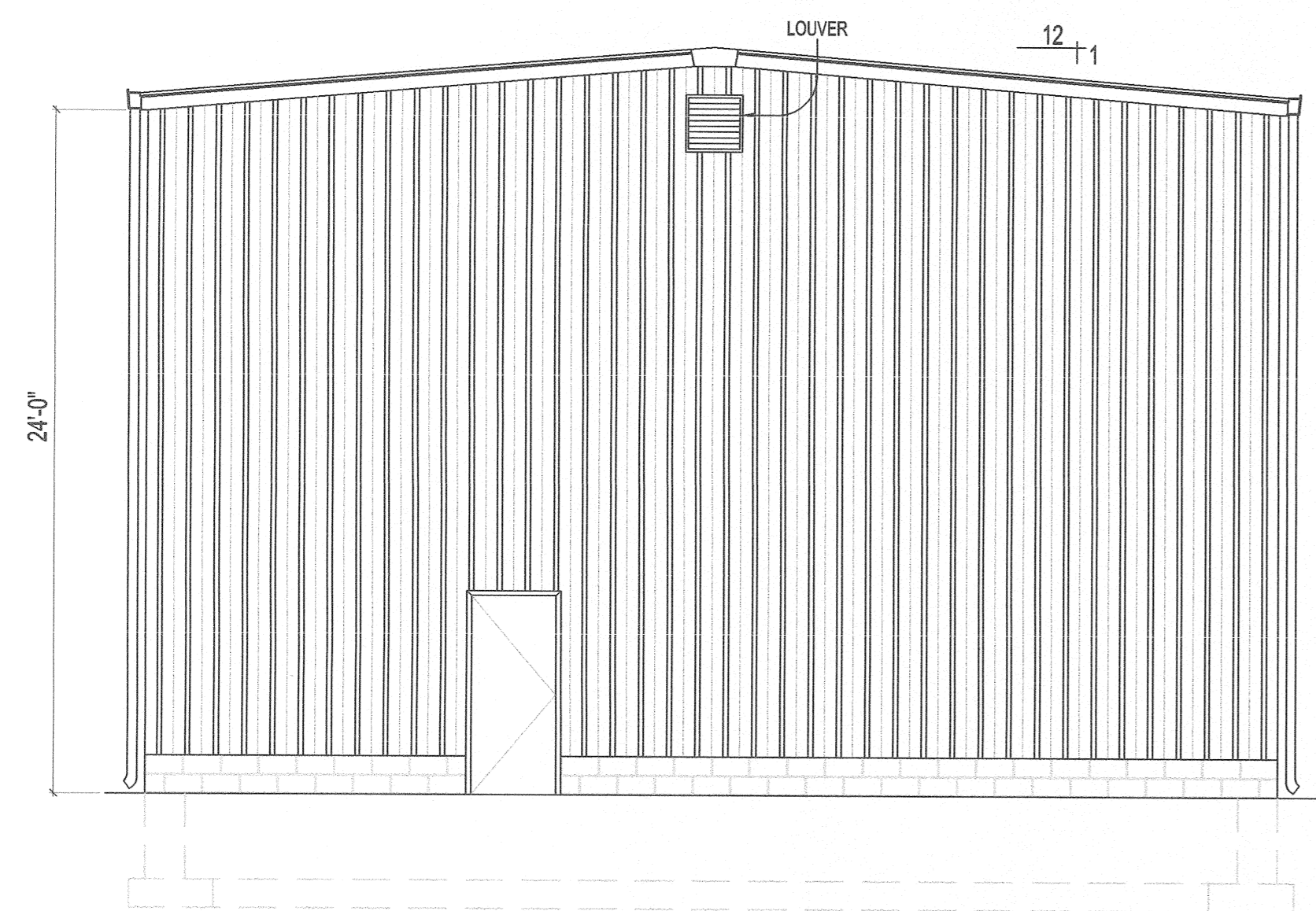
FLOOR PLAN

DRAWN BY R. FISHBURN	DATE 30-MARCH-2017	DRAWING NO. A.1.0
CHECKED BY R. DAUTRICH	SCALE AS NOTED	

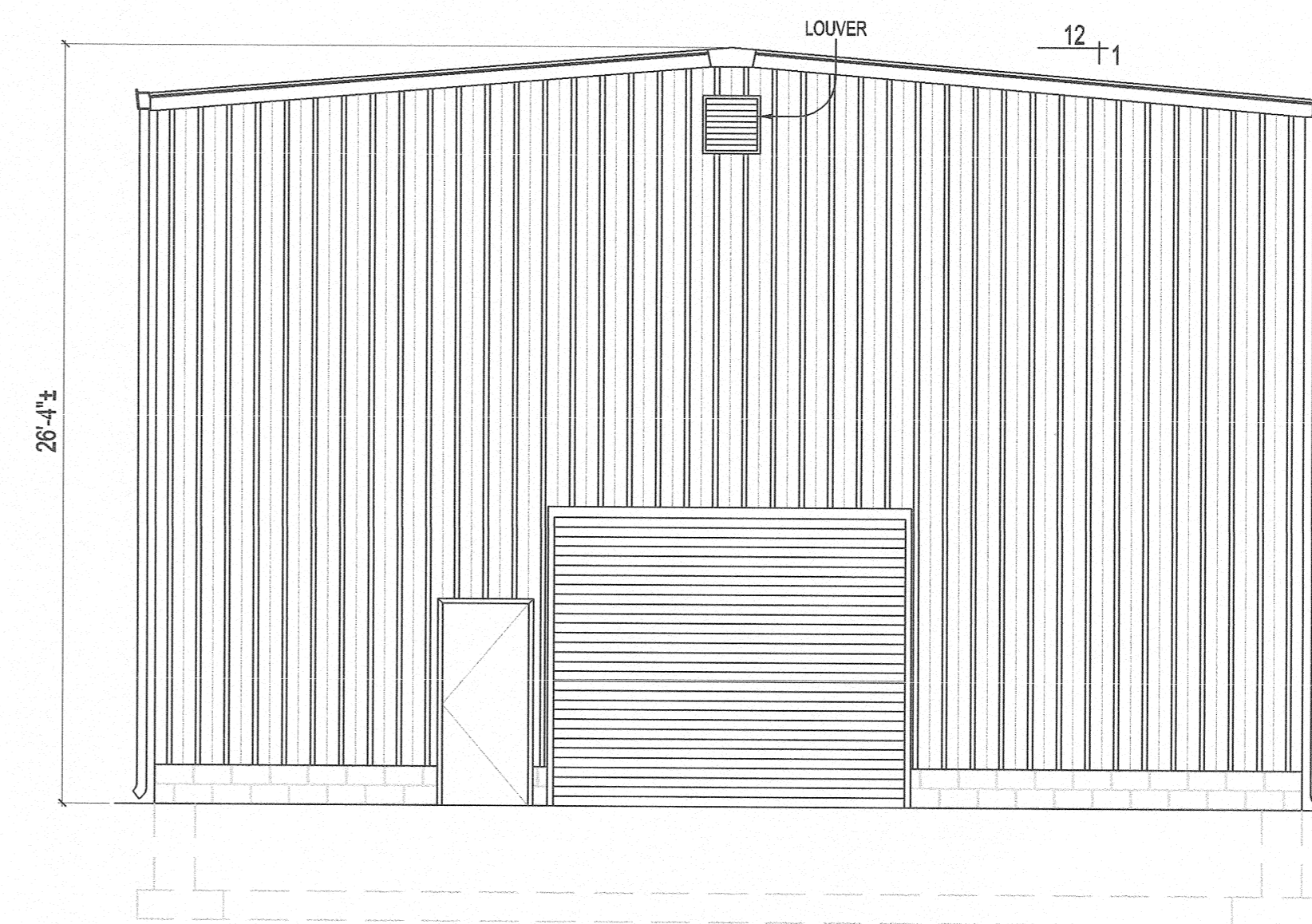




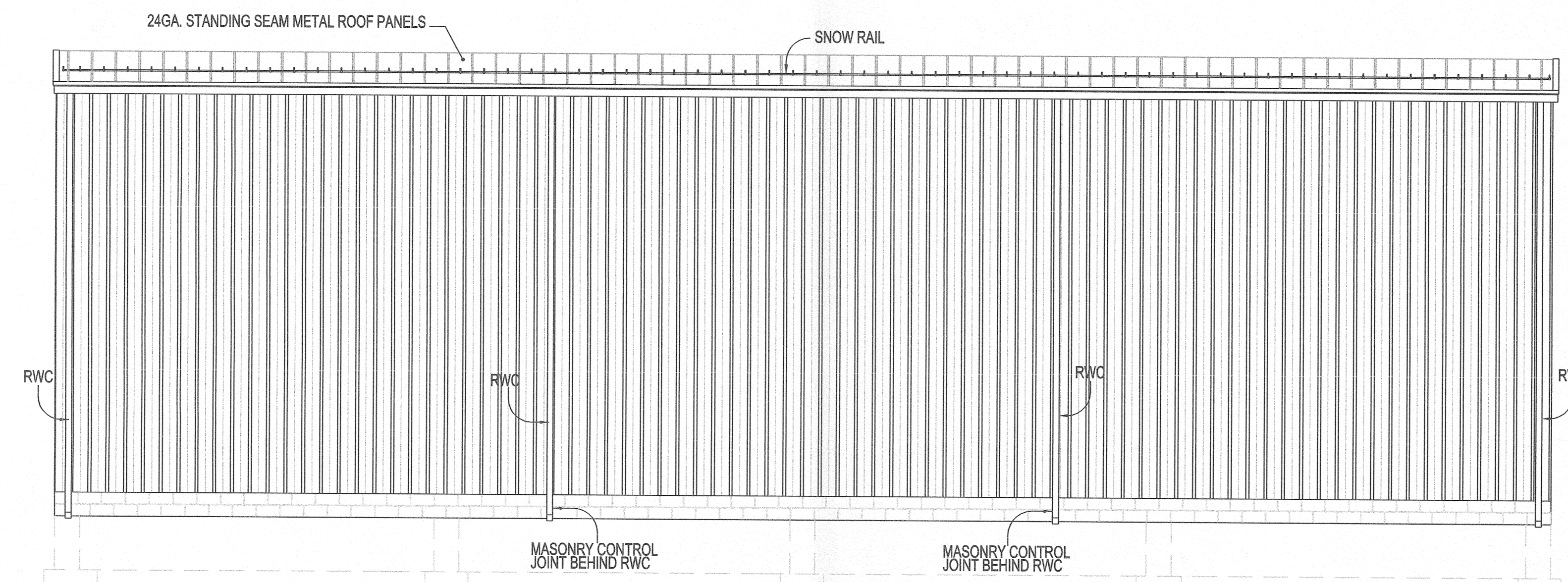
WEST ELEVATION
SCALE: 3/16" = 1'-0"



SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

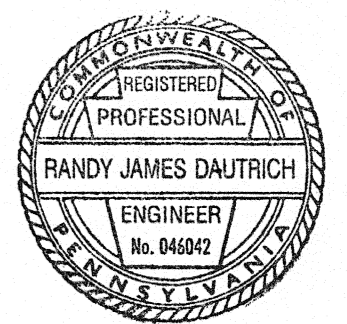


NORTH ELEVATION
SCALE: 3/16" = 1'-0"



EAST ELEVATION
SCALE: 3/16" = 1'-0"

NO.	DESCRIPTION	DATE
REVISIONS		



Randy James Dautrich
Professional's Signature Date

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
BLDG. 0-10, FORT INDIANTOWN GAP
ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

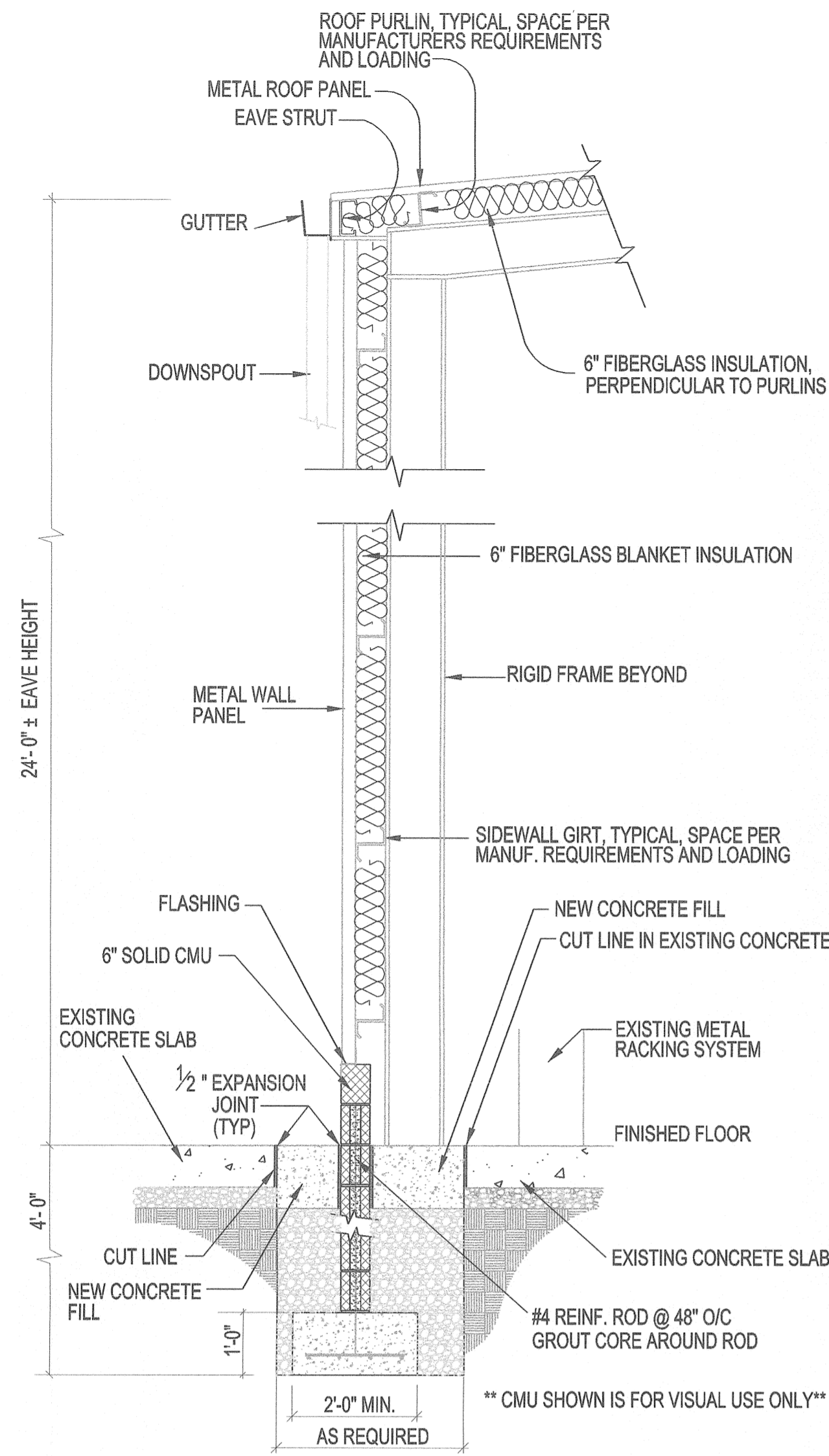
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

PROJECT NO. D.G.S. A963-35
DMVA PROJECT NO. 42150101

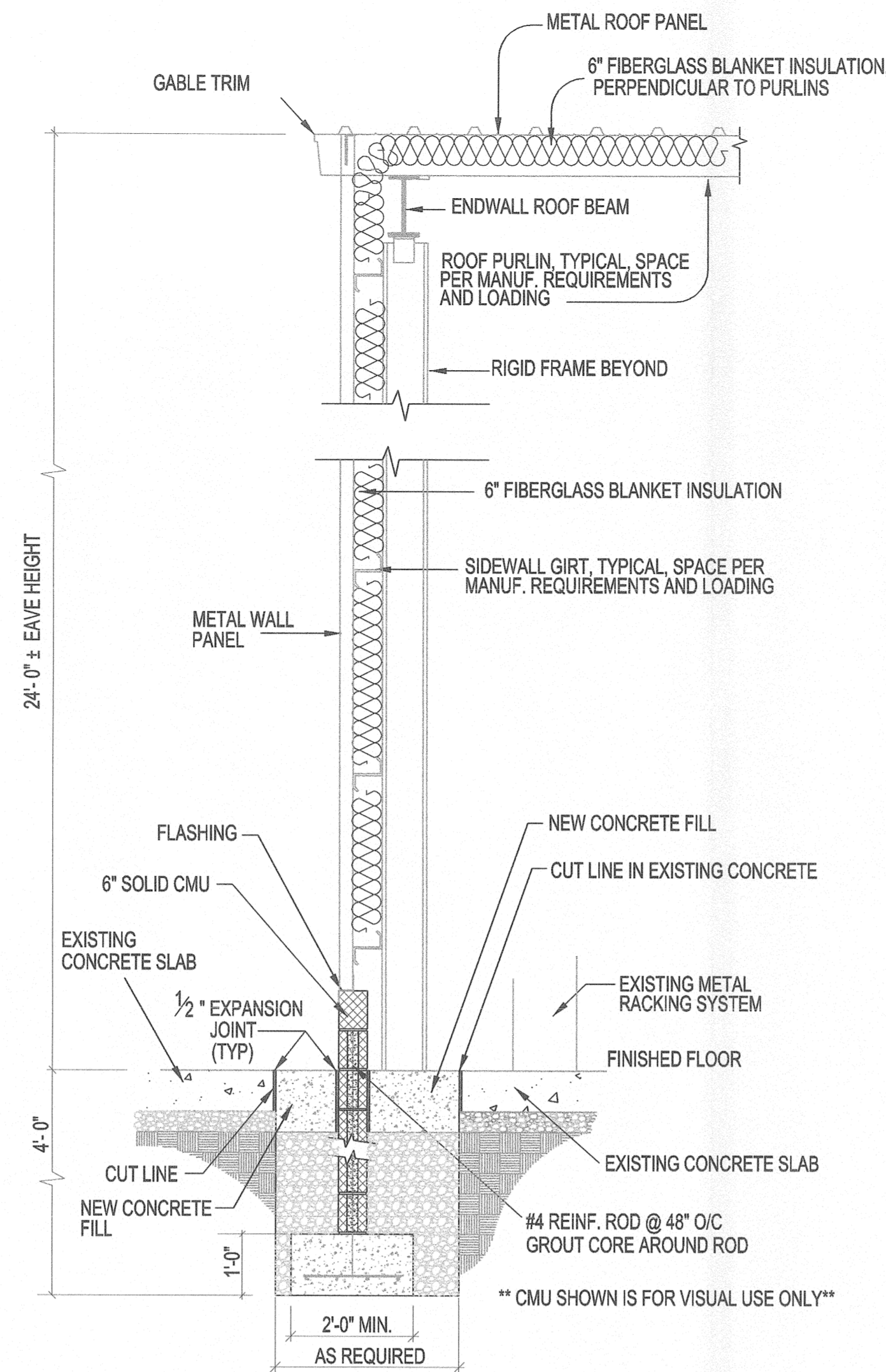
SCRANTON / TAYLOR FMS
PRE-ENGINEERED STEEL STORAGE BLDG.
8 STAUFFER INDUSTRIAL PARK
TAYLOR, LACKAWANNA CO., PA

ELEVATIONS

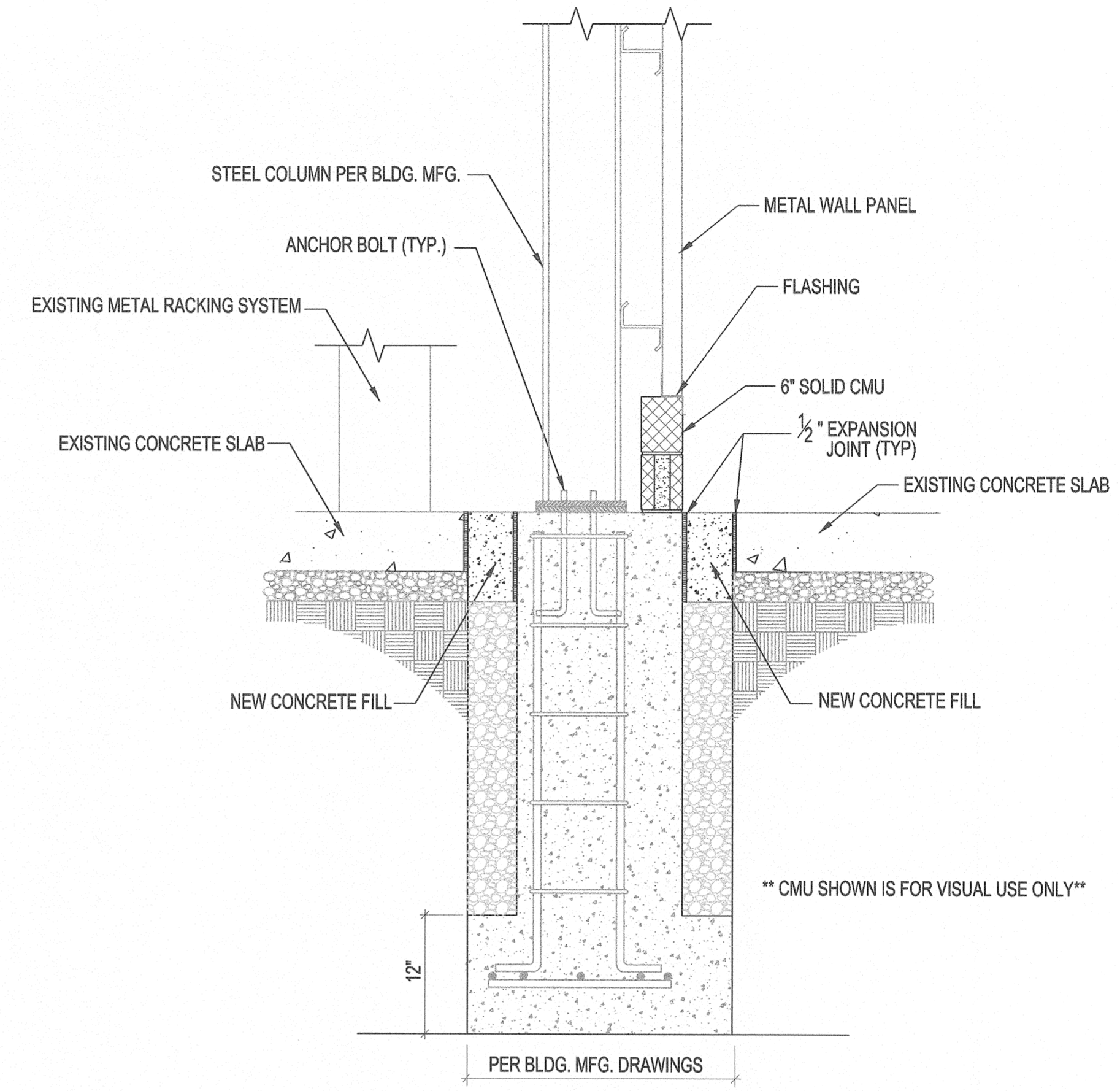
DRAWN BY R. FISHBURN	DATE 30-MARCH-2017	DRAWING NO.
CHECKED BY R. DAUTRICH	SCALE AS NOTED	A.2.0



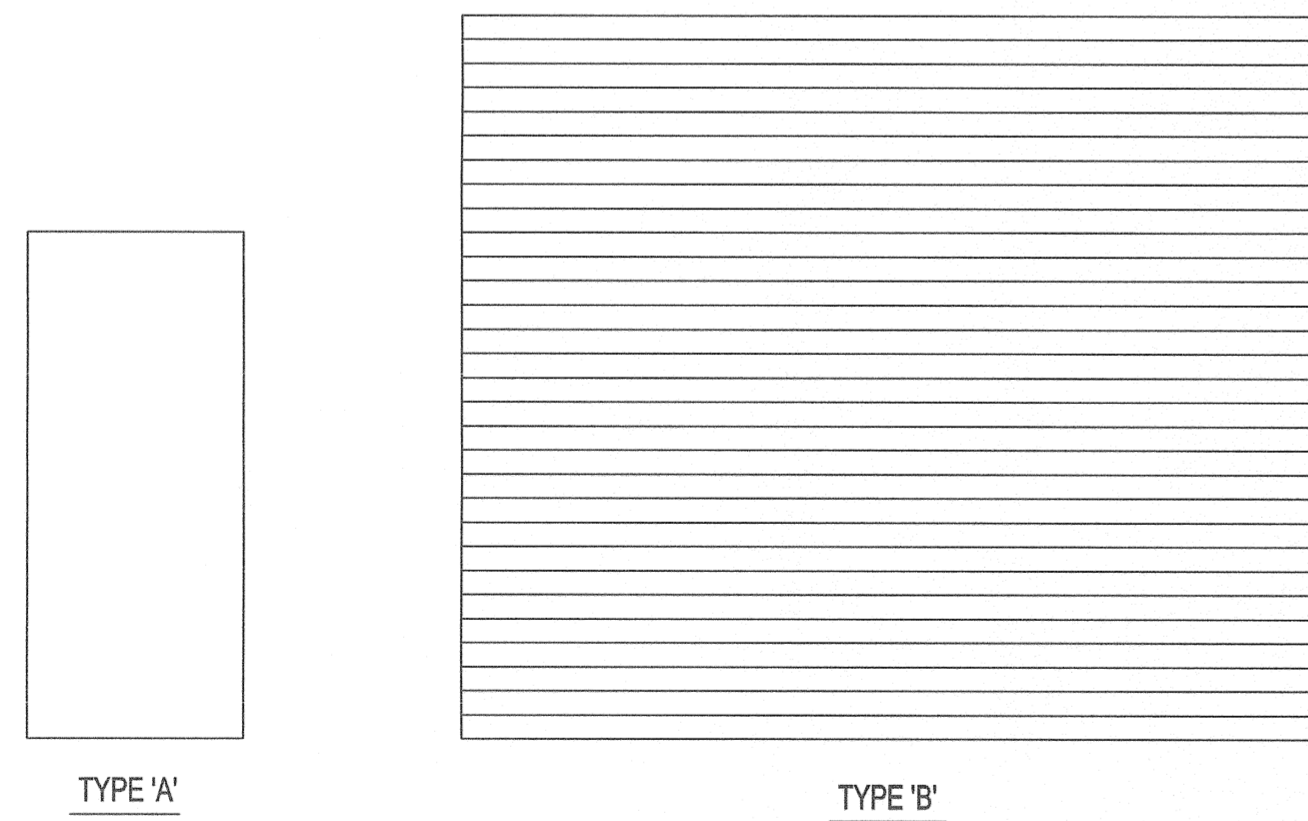
1
A.1.0
SIDEWALL SECTION
NOT TO SCALE



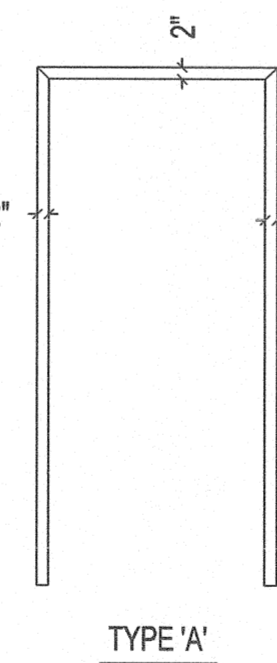
2
A.1.0
TYP. ENDWALL SECTION
NOT TO SCALE



3
A.1.0
TYP. PIER - SIDE VIEW
SCALE: 3/4" = 1'-0"



DOOR TYPES
SCALE: 3/8" = 1'-0"



FRAME TYPES
SCALE: 3/8" = 1'-0"

HARDWARE SET #1

HINGES: HEAVY DUTY, 5 KNUCKLE, FULL MORTISE
OPENING DEVICE: LEVER HANDLE w/ KEYED CORE
EXIT DEVICE: TOUCH BAR
CLOSER: TOP SURFACE MOUNT ON DOOR
w/ 120" PARALLEL ARM
THRESHOLD - ADA COMPLIANT
WEATHER-STRIPPING

NOTE: LOCK CYLINDER MUST BE A -
'BEST ACCESS SYSTEMS CORE'

HARDWARE SET #2

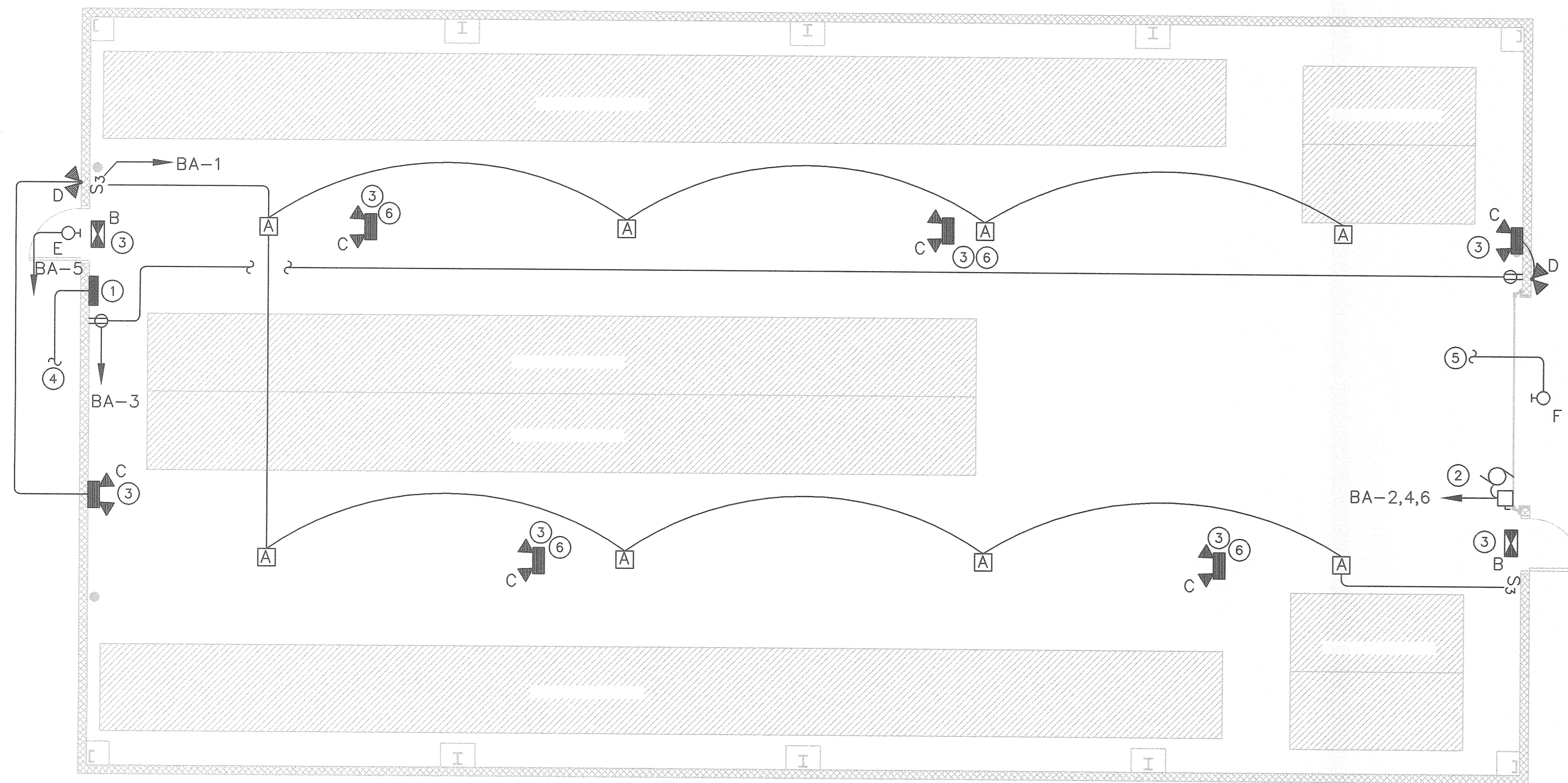
PROVIDED BY OVERHEAD DOOR MANUFACTURE
PROVIDE ELECTRIC OPENER

LEGEND

- MASONRY WALL
- CONCRETE
- GROUT, GYPSUM SHEETING
- STEEL
- STONE, GRAVEL FILL
- EARTH
- FIBERGLASS INSULATION
- DOOR NUMBER
- SECTION NUMBER
- SHEET NUMBER
- DETAIL NUMBER
- SHEET NUMBER

DOOR NUMBER	DOOR AND FRAME SCHEDULE										REMARKS	DOOR NUMBER				
	DOOR					LOUVER		FRAME		HARDWARE						
	SIZE	MAT'L	TYPE	GLASS	FIRE RATING	W	H	MAT'L	TYPE	SET NO.			KEY SIDE	CLOSER SIDE		
101	3'-0"	7'-0"	2"	STEEL	A					STEEL	A	1	EXTERIOR	INTERIOR		101
102	3'-0"	7'-0"	2"	STEEL	A					STEEL	A	1	EXTERIOR	INTERIOR		102
103	12'-0"	10'-0"	2"	STEEL	B	SEE DWG.				STEEL	BY MFG.	2		INTERIOR	ELECTRIC OPENER REQUIRED	103

NO.	DESCRIPTION	DATE
REVISIONS		
<p>COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF MILITARY AND VETERANS AFFAIRS BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING BLDG. 0-10, FORT INDIANTOWN GAP ANNVILLE, LEBANON COUNTY, PENNSYLVANIA</p>		
<p>COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF GENERAL SERVICES HARRISBURG, PENNSYLVANIA</p>		
PROJECT NO. D.G.S.		A963-35
DMVA PROJECT NO.		42150101
<p>SCRANTON / TAYLOR FMS PRE-ENGINEERED STEEL STORAGE BLDG. 8 STAUFFER INDUSTRIAL PARK TAYLOR, LACKAWANNA CO., PA</p>		
<p>SECTIONS & DETAILS</p>		
DRAWN BY	DATE	DRAWING NO.
R. FISHBURN	30-MARCH-2017	A.3.0
CHECKED BY	SCALE	
R. DAUTRICH	AS NOTED	



FIRST FLOOR
SCALE: 3/16" = 1'-0"

GENERAL NOTES FOR ALL ELECTRICAL PLANS

1. ALL WORK MUST MEET UCC REQUIREMENTS. ALL WORK MUST MEET NEC, 2008.
2. THE ELECTRICAL CONTRACTOR (EC) SHALL PROVIDE ALL MATERIALS AND WORK FOR A COMPLETE AND OPERATIONAL SYSTEM. THE EC IS RESPONSIBLE FOR ALL "WAYS AND MEANS OF CONSTRUCTION" NOT SPECIFICALLY DETAILED, I.E. JUNCTION BOXES, ETC.
3. WHEN THE PHRASE "EXTEND AND CONNECT" IS USED IN ANY VARIATION, IT SHALL MEAN TO PROVIDE CONDUIT AND WIRE AS INDICATED ON THE PANEL SCHEDULE FOR THE ASSOCIATED CIRCUIT, TO THE POINT INDICATED EITHER IN THE NOTE OR ON THE DRAWING. PROVIDE ALL TERMINATIONS, BOXES, CONDUIT, WIRE, CONNECTORS, ETC. FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. ALL CIRCUITS SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR. SHARING OF NEUTRAL CONDUCTOR IS NOT PERMITTED.

PLAN NOTES

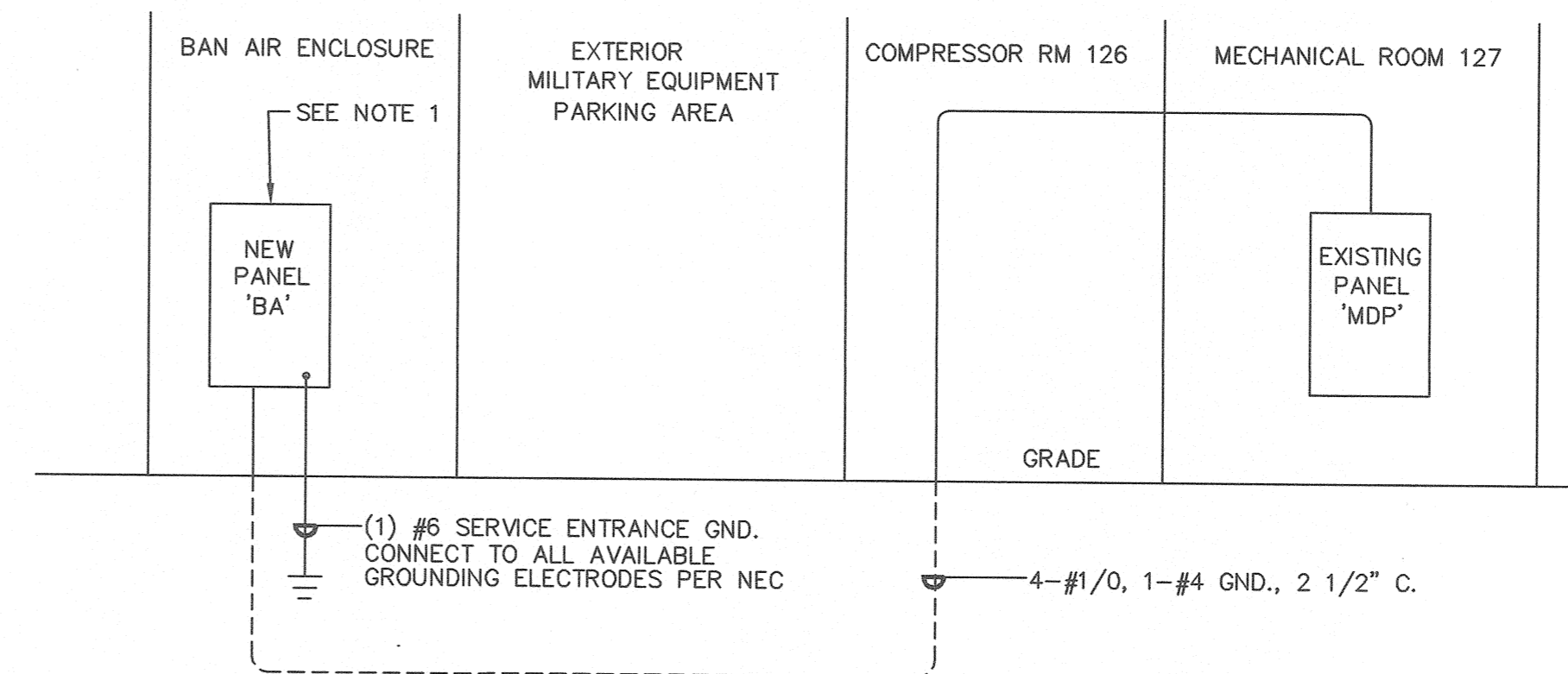
- 1 NEW 208/120V-3Ø, 100A PANEL BOARD 'BA'
- 2 ELECTRICALLY OPERATED OVERHEAD DOOR BY THE GENERAL CONTRACTOR, 208V-3Ø, 1 HP. FURNISH AND INSTALL A 30A-3P DISCONNECT SWITCH AND CONNECT AS INDICATED.
- 3 EXTEND AND CONNECT 2#12 W/G FROM BATTERY PACK/EXIT SIGN/INTEGRAL EM BALLAST TO UNSWITCHED HOT LEG OF LIGHTING CIRCUIT SERVING THIS AREA.
- 4 SEE ELECTRICAL SITE PLAN DRAWING ES.1.1.
- 5 CONNECT TO EXTERIOR LIGHTING CIRCUIT BA-5.
- 6 MOUNT BATTERY PACK TO STEEL ABOVE WITH UNISTRUT AND ALLTHREAD.

PANEL: BA VOLTAGE: 208V PHASE: 3 NO. WIRE: 4 MOUNTED: SURFACE										
100 AMP BUS & LUG 24 MIN. NO. POLES 100 AMP MAIN BREAKER MLO										
CIR. NO.	EQUIPMENT	BREAKER	FEEDER	L1	L2	L3	FEEDER	BREAKER	EQUIPMENT	CIR. NO.
1	LIGHTING	20A-1P	2#12 W/G	9.3	4.0				SPARE	2
3	RECEPTACLES				3.0	4.0	3#12 W/G	15A-3P	MOTORIZED DOOR	4
5	EXTERIOR LIGHTING					0.7	4.0			6
7	SPARE			0	0			20A-1P	SPARE	8
9				0	0					10
11						0	0			12
13	BUSSED SPACE			0	0				BUSSED SPACE	14
15				0	0					16
17						0	0			18
19				0	0					20
21					0	0				22
23						0	0			24
				13.3	7.0	4.7				

NOTE: ALL EQUIPMENT GROUNDING CONDUCTORS FOR LISTED BRANCH CIRCUITS SHALL BE #12 AWG.

LIGHTING FIXTURE SCHEDULE

I.D.	DESCRIPTION	MANUFACTURER		CAT. NO.	LAMPS	MTG.	REMARKS
		BASIS OF DESIGN					
A	INDUSTRIAL HIGH BAY	COLUMBIA		HBL-60LU-Y2-5K-W-070-GR-	LED	YOKE	
B	EXIT LIGHT	DUAL LITE		SEWL S W E HTR	LED	WALL	SUITABLE FOR COLD WEATHER
C	EMERGENCY BATTERY PACK	DUAL LITE		DYN 12 I HTR	3W LED	WALL	SUITABLE FOR COLD WEATHER
D	EXTERIOR REMOTE HEADS	DUAL LITE		DYNRD-4X	(2) 3W LED HEADS	WALL	
E	EXTERIOR WALL LIGHT	HUBBELL		NRG-310LU-PC	14W LED	WALL	MOUNT AT 8'0" ABOVE GRADE
F	EXTERIOR WALL PACK	HUBBELL		LMC-30LU-5K-4-1-PC	30 LED	WALL	MOUNT AT 14'-0" ABOVE GRADE

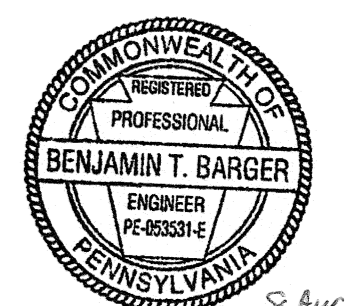


PARTIAL ELECTRICAL RISER DIAGRAM

NO SCALE

- NOTES:
1. CONTRACTOR SHALL PROVIDE ENGRAVED SIGN AT PANEL BOARD STATING LOCATION OF DISCONNECT DEVICE FOR DISCONNECTING FEEDER. DO NOT INSTALL A JUMPER BETWEEN GROUND BUS AND NEUTRAL BUS.

NO.	DESCRIPTION	DATE
REVISIONS		



Benjamin T. Barger
Professional's Signature Date 8 AUG 17

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
BLDG. 0-10, FORT INDIANTOWN GAP
ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

PROJECT NO. D.G.S. A963-35
DMVA PROJECT NO. 42150101

SCRANTON / TAYLOR FMS
PRE-ENGINEERED STEEL STORAGE BLDG.
8 STAUFFER INDUSTRIAL PARK
TAYLOR, LACKAWANNA CO., PA

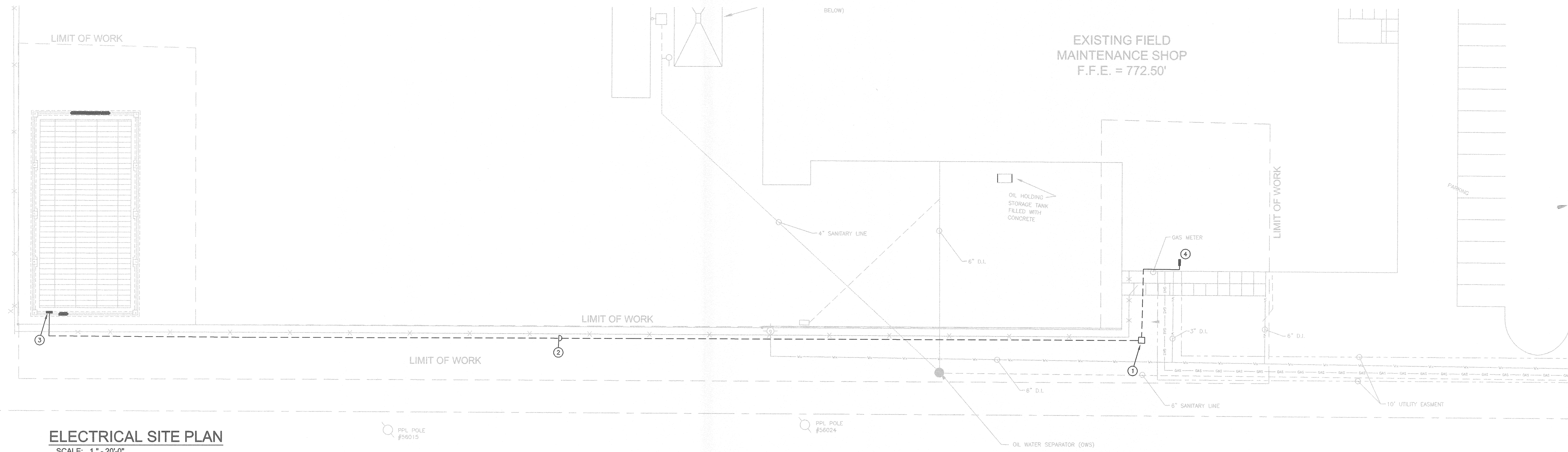
LIGHTING & POWER PLAN

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:
0 1
IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT BUREAU OF ENGINEERING AND ARCHITECTURE APPROVAL.

DRAWN BY K.S.M.	DATE 30 MAR 2017	DRAWING NO. E.1.1
CHECKED BY B.T.B.	SCALE AS NOTED	



ELECTRICAL SITE PLAN
SCALE: 1" = 20'-0"

ABBREVIATIONS

A	AMPERE	KW	KILOWATT
AFF	ABOVE FINISHED FLOOR	MC	MECHANICAL CONTRACTOR
C	CONDUIT	MLO	MAIN LUG ONLY
CT	CURRENT TRANSFORMER	MOP	MAXIMUM OVERCURRENT PROTECTION
DWG	DRAWING	β	PHASE
EC	ELECTRICAL CONTRACTOR	P	POLE
ETR	EXISTING TO REMAIN	PC	PLUMBING CONTRACTOR
FLA	FULL LOAD AMPS	RGS	RIGID GALVANIZED STEEL CONDUIT
FT	FEET	TBB	TELEPHONE BACKBOARD
GC	GENERAL CONTRACTOR	TV	TELEVISION
GFI	GROUND FAULT INTERRUPTING	UNO	UNLESS NOTED OTHERWISE
GND	GROUND	V	VOLT
HC	HEATING CONTRACTOR	W	WATT OR WIRE
HP	HORSEPOWER	W/	WITH
HUH	HORIZONTAL UNIT HEATER	W/G	WITH GROUND
		W/P	WEATHER-PROOF

SYMBOLS

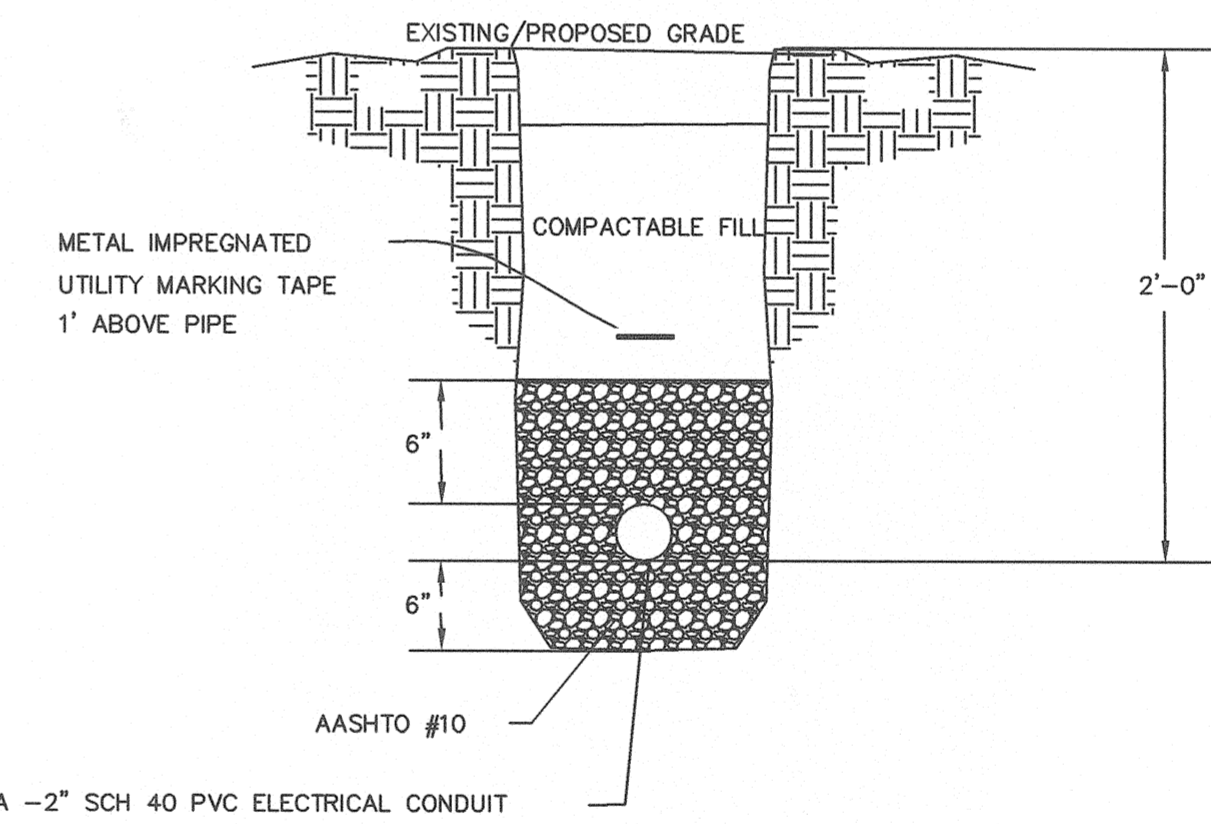
○	LIGHT FIXTURE, CEILING	▽	DATA/TELEPHONE OUTLET - 2 JACKS PER BOX
○-H	LIGHT FIXTURE, WALL	▽	DATA/TELEPHONE OUTLET - 4 JACKS PER BOX
S	SINGLE POLE SWITCH	⊙	MOTOR
S3	THREE-WAY SWITCH	⊕	JUNCTION BOX
S4	FOUR-WAY SWITCH	→	INDIVIDUAL HOMERUN TO PANEL INDICATED
Soc	WALL BOX OCCUPANCY SENSOR	□	PANELBOARD
⊕	DUPLEX RECEPTACLE	⊕	EMERGENCY BATTERY PACK
C	MOUNTED ABOVE COUNTER	▶	REMOTE EMERGENCY HEAD
⊕	QUADRUPLEX RECEPTACLE	⊕	EXIT SIGN
⊕	GROUND FAULT INTERRUPTING RECEPTACLE	⊕	CEILING MOUNTED OCCUPANCY SENSOR
WP	WEATHERPROOF WHILE IN USE	⊕	COMBINATION STARTER/DISCONNECT
ST	MANUAL STARTER WITHOUT THERMAL OVERLOAD		
□	DISCONNECT SWITCH		

GENERAL NOTES

- ALL TRENCHING, CONDUIT, WRING, CONNECTIONS, BACKFILL AND COMPACTION UP TO FINISHED GRADE SHALL BE BY THE ELECTRICAL CONTRACTOR.
- ALL FINAL GRADING AND SEEDING OR RETURNING TRENCHED AREA TO ORIGINAL CONDITION SHALL BE BY THE ELECTRICAL CONTRACTOR.
- SEE SITE-CIVIL DRAWING FOR SITE CONDITIONS AFFECTING ALL ELECTRICAL WORK.

PLAN NOTES

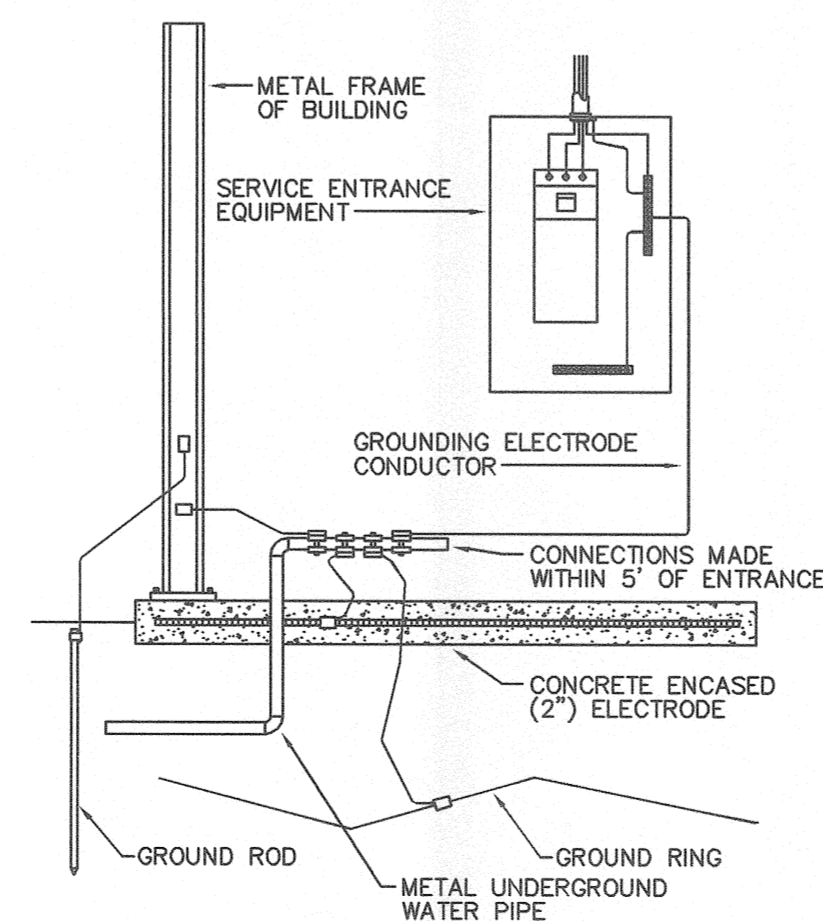
- NEW 12"x12"x12" DEEP POLYMER PULL BOX BY THE ELECTRICAL CONTRACTOR. BOX SHALL INDICATE ELECTRICAL ON COVER AND SHALL BE GASKETED.
- FURNISH AND INSTALL 4#1, 1#B GND., 2" CONDUIT. CONTRACTOR SHALL USE RIGID ELBOWS AND RIGID CONDUIT FOR TRANSITIONING FROM UNDERGROUND. EMT CONDUIT SHALL BE USED ON INTERIOR OF BUILDING.
- NEW 208/120V-3Ø, 100A PANEL BOARD. SEE PANEL SCHEDULE ON DRAWING E.1.1.
- EXISTING MAIN DISTRIBUTION PANEL BOARD. CONTRACTOR SHALL CONNECT NEW FEEDERS FOR PANEL BA TO EXISTING 100A-3P CIRCUIT BREAKER.



ELECTRICAL DUCT BANK

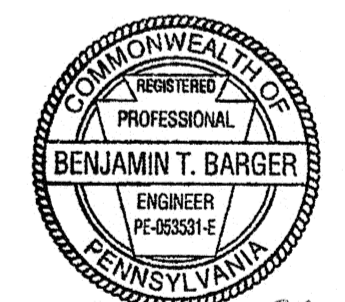
GROUNDING DETAIL NOTES:

- GROUNDING ELECTRODE CONDUCTOR SHALL BE #2/0 COPPER.
- REFER TO SPECIFICATIONS FOR THE SIZE AND TYPE OF CONDUCTORS TO BE USED FOR ALL BONDING CONDUCTORS, BONDING JUMPERS, AND GROUND RING CONDUCTORS.
- REFER TO THE SPECIFICATIONS FOR ALL CONNECTORS AND THEIR APPLICATIONS.
- PROVIDE ALL GROUNDING COUNTERPOISES, GROUND RODS, AND GROUND RINGS AS PER THE SPECIFICATION.
- PROVIDE GROUNDING ELECTRODE CONDUCTORS FOR ALL GROUNDING ELECTRODES AVAILABLE AS PER NEC 2008, 250.50.
- NOT ALL GROUNDING CONNECTIONS MAY APPLY TO THIS BUILDING.



TYPICAL GROUNDING DETAIL
NO SCALE

NO.	DESCRIPTION	DATE
REVISIONS		



Benjamin T. Barger
Professional's Signature 8 Aug 17
Date

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF MILITARY AND VETERANS AFFAIRS
BUREAU OF MILITARY CONSTRUCTION AND ENGINEERING
BLDG. 0-10, FORT INDIANTOWN GAP
ANNVILLE, LEBANON COUNTY, PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

PROJECT NO. D.G.S. A963-35
DMVA PROJECT NO. 42150101

SCRANTON / TAYLOR FMS
PRE-ENGINEERED STEEL STORAGE BLDG.
8 STAUFFER INDUSTRIAL PARK
TAYLOR, LACKAWANNA CO., PA

ELECTRICAL SITE PLAN

VERIFY SCALE

BAR IS ONE (1) INCH LONG ON ORIGINAL DRAWING:

0 1

IF BAR IS NOT ONE (1) INCH LONG, ADJUST SCALE ACCORDINGLY

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS. VARIANCE FROM CONTRACT DOCUMENTS NOT PERMITTED WITHOUT BUREAU OF ENGINEERING AND ARCHITECTURE APPROVAL.

DRAWN BY K.S.M.	DATE 30 MAR 2017	DRAWING NO. ES.1.1
CHECKED BY B.T.B.	SCALE AS NOTED	

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project Name:	42150101, Scranton/Taylor FMS, Pre-Engineered Steel Building
Awarding Agency:	Department of Military and Veterans Affairs
Contract Award Date:	7/1/2018
Serial Number:	18-04863
Project Classification:	Building
Determination Date:	6/26/2018
Assigned Field Office:	Scranton
Field Office Phone Number:	(570)963-4577
Toll Free Phone Number:	(877)214-3962
Project County:	Lackawanna County

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Asbestos & Insulation Workers	7/1/2019		\$32.48	\$20.52	\$53.00
Asbestos & Insulation Workers	7/1/2018		\$32.48	\$19.52	\$52.00
Asbestos & Insulation Workers	7/1/2016		\$32.48	\$18.52	\$51.00
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2018		\$29.52	\$18.22	\$47.74
Boilermaker (Commercial, Institutional, and Minor Repair Work)	3/1/2017		\$28.52	\$18.22	\$46.74
Boilermakers	3/1/2018		\$45.89	\$33.73	\$79.62
Boilermakers	1/1/2018		\$46.26	\$33.36	\$79.62
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2020		\$35.94	\$17.14	\$53.08
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2021		\$36.82	\$17.36	\$54.18
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2019		\$35.15	\$16.93	\$52.08
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2017		\$33.82	\$16.56	\$50.38
Bricklayers, Stone Masons, Pointers, Caulkers, Cleaners	5/1/2018		\$34.44	\$16.74	\$51.18
Carpenters, Drywall Hangers, Framers, Instrument Men, Lathers, Soft Floor Layers	5/1/2016		\$28.53	\$16.08	\$44.61
Cement Finishers	6/1/2016		\$32.43	\$11.35	\$43.78
Drywall Finisher	5/1/2017		\$27.81	\$18.17	\$45.98
Electricians	6/1/2017		\$35.94	\$21.70	\$57.64
Elevator Constructor	1/1/2016		\$45.04	\$30.28	\$75.32
Elevator Constructor	1/1/2018		\$47.48	\$33.00	\$80.48
Glazier	5/1/2016		\$29.02	\$15.51	\$44.53
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2017		\$32.32	\$28.42	\$60.74
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2018		\$33.07	\$28.42	\$61.49
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2019		\$33.76	\$28.42	\$62.18
Laborers (Class 01 - See notes)	5/1/2018		\$21.40	\$17.63	\$39.03
Laborers (Class 01 - See notes)	5/1/2017		\$21.15	\$16.88	\$38.03
Laborers (Class 01 - See notes)	5/1/2019	4/30/2020	\$21.70	\$18.33	\$40.03
Laborers (Class 01 - See notes)	5/1/2019		\$21.70	\$18.62	\$40.32
Laborers (Class 01 - See notes)	5/1/2020		\$22.05	\$19.32	\$41.37
Laborers (Class 02 - See notes)	5/1/2018		\$23.40	\$17.63	\$41.03
Laborers (Class 02 - See notes)	5/1/2017		\$23.15	\$16.88	\$40.03
Laborers (Class 02 - See notes)	5/1/2019		\$23.70	\$18.33	\$42.03
Laborers (Class 02 - See notes)	5/1/2019	4/30/2020	\$23.70	\$18.33	\$42.03
Laborers (Class 02 - See notes)	5/1/2020		\$24.05	\$19.03	\$43.08
Laborers (Class 03 - See notes)	5/1/2017		\$23.67	\$17.17	\$40.84
Laborers (Class 03 - See notes)	5/1/2019		\$24.47	\$18.62	\$43.09
Laborers (Class 03 - See notes)	5/1/2019	4/30/2020	\$24.47	\$18.62	\$43.09
Laborers (Class 03 - See notes)	5/1/2020		\$24.05	\$19.32	\$43.37
Laborers (Class 03 - See notes)	5/1/2018		\$24.02	\$17.92	\$41.94

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 04 - See notes)	5/1/2017		\$25.17	\$17.17	\$42.34
Laborers (Class 04 - See notes)	5/1/2019		\$25.97	\$18.51	\$44.48
Laborers (Class 04 - See notes)	5/1/2018		\$25.52	\$17.81	\$43.33
Laborers (Class 04 - See notes)	5/1/2019	4/30/2020	\$25.97	\$18.62	\$44.59
Laborers (Class 04 - See notes)	5/1/2020		\$26.12	\$19.21	\$45.33
Laborers (Class 04 - See notes)	5/1/2019	4/30/2020	\$26.47	\$18.62	\$45.09
Laborers (Class 05 - See notes)	5/1/2020		\$26.12	\$19.32	\$45.44
Laborers (Class 05 - See notes)	5/1/2019		\$26.47	\$18.62	\$45.09
Laborers (Class 05 - See notes)	5/1/2017		\$25.67	\$17.17	\$42.84
Laborers (Class 05 - See notes)	5/1/2018		\$26.02	\$17.92	\$43.94
Laborers (Class 05 - See notes)	5/1/2019	4/30/2020	\$26.47	\$18.62	\$45.09
Laborers (Class 06 - See notes)	5/1/2019	4/30/2020	\$24.47	\$18.33	\$42.80
Laborers (Class 06 - See notes)	5/1/2020		\$24.82	\$19.03	\$43.85
Laborers (Class 06 - See notes)	5/1/2019		\$24.47	\$18.33	\$42.80
Laborers (Class 06 - See notes)	5/1/2017		\$23.92	\$16.88	\$40.80
Laborers (Class 06 - See notes)	5/1/2018		\$24.17	\$17.63	\$41.80
Laborers (Group 1)	5/1/2018	4/30/2019	\$21.40	\$17.63	\$39.03
Laborers (Group 2)	5/1/2018	4/30/2019	\$23.40	\$17.63	\$41.03
Laborers (Group 4)	5/1/2018	4/30/2019	\$25.52	\$17.92	\$43.44
Marble Mason	5/1/2020		\$33.45	\$15.68	\$49.13
Marble Mason	5/1/2019		\$32.66	\$15.47	\$48.13
Marble Mason	5/1/2018		\$31.85	\$15.28	\$47.13
Marble Mason	5/1/2021		\$34.23	\$15.90	\$50.13
Marble Mason	5/1/2017		\$31.03	\$15.10	\$46.13
Millwright	5/1/2017		\$33.79	\$18.16	\$51.95
Operators (Building, Class 01 - See Notes)	5/1/2020		\$39.87	\$25.94	\$65.81
Operators (Building, Class 01 - See Notes)	5/1/2021		\$41.41	\$26.40	\$67.81
Operators (Building, Class 01 - See Notes)	5/1/2018		\$36.78	\$25.03	\$61.81
Operators (Building, Class 01 - See Notes)	5/1/2019		\$38.32	\$25.49	\$63.81
Operators (Building, Class 01 - See Notes)	5/1/2017		\$35.24	\$24.58	\$59.82
Operators (Building, Class 01A - See Notes)	5/1/2021		\$43.66	\$27.06	\$70.72
Operators (Building, Class 01A - See Notes)	5/1/2020		\$42.12	\$26.60	\$68.72
Operators (Building, Class 01A - See Notes)	5/1/2019		\$40.57	\$26.15	\$66.72
Operators (Building, Class 01A - See Notes)	5/1/2018		\$39.03	\$25.69	\$64.72
Operators (Building, Class 01A - See Notes)	5/1/2017		\$37.49	\$25.23	\$62.72
Operators (Building, Class 02 - See Notes)	5/1/2020		\$39.59	\$25.84	\$65.43
Operators (Building, Class 02 - See Notes)	5/1/2018		\$36.50	\$24.95	\$61.45
Operators (Building, Class 02 - See Notes)	5/1/2019		\$38.05	\$25.39	\$63.44
Operators (Building, Class 02 - See Notes)	5/1/2021		\$41.13	\$26.30	\$67.43
Operators (Building, Class 02 - See Notes)	5/1/2017		\$34.96	\$24.49	\$59.45
Operators (Building, Class 02A - See Notes)	5/1/2021		\$43.38	\$26.98	\$70.36
Operators (Building, Class 02A - See Notes)	5/1/2019		\$40.30	\$26.06	\$66.36
Operators (Building, Class 02A - See Notes)	5/1/2018		\$38.75	\$25.61	\$64.36
Operators (Building, Class 02A - See Notes)	5/1/2016		\$36.43	\$23.93	\$60.36

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Building, Class 02A - See Notes)	5/1/2017		\$37.21	\$25.16	\$62.37
Operators (Building, Class 03 - See Notes)	5/1/2020		\$36.86	\$25.05	\$61.91
Operators (Building, Class 03 - See Notes)	5/1/2021		\$38.41	\$25.50	\$63.91
Operators (Building, Class 03 - See Notes)	5/1/2019		\$35.32	\$24.59	\$59.91
Operators (Building, Class 03 - See Notes)	5/1/2018		\$33.78	\$24.12	\$57.90
Operators (Building, Class 03 - See Notes)	5/1/2017		\$32.23	\$23.68	\$55.91
Operators (Building, Class 04 - See Notes)	5/1/2021		\$37.26	\$25.18	\$62.44
Operators (Building, Class 04 - See Notes)	5/1/2018		\$32.63	\$23.80	\$56.43
Operators (Building, Class 04 - See Notes)	5/1/2019		\$34.17	\$24.27	\$58.44
Operators (Building, Class 04 - See Notes)	5/1/2020		\$35.73	\$24.71	\$60.44
Operators (Building, Class 04 - See Notes)	5/1/2017		\$30.33	\$22.12	\$52.45
Operators (Building, Class 05 - See Notes)	5/1/2020		\$35.28	\$24.59	\$59.87
Operators (Building, Class 05 - See Notes)	5/1/2021		\$36.82	\$25.04	\$61.86
Operators (Building, Class 05 - See Notes)	5/1/2018		\$32.18	\$23.69	\$55.87
Operators (Building, Class 05 - See Notes)	5/1/2017		\$29.87	\$21.99	\$51.86
Operators (Building, Class 05 - See Notes)	5/1/2019		\$33.73	\$24.14	\$57.87
Operators (Building, Class 06 - See Notes)	5/1/2021		\$35.95	\$24.77	\$60.72
Operators (Building, Class 06 - See Notes)	5/1/2018		\$31.31	\$23.41	\$54.72
Operators (Building, Class 06 - See Notes)	5/1/2020		\$34.40	\$24.32	\$58.72
Operators (Building, Class 06 - See Notes)	5/1/2017		\$29.00	\$21.72	\$50.72
Operators (Building, Class 06 - See Notes)	5/1/2019		\$32.86	\$23.86	\$56.72
Operators (Building, Class 07A- See Notes)	5/1/2021		\$49.86	\$30.31	\$80.17
Operators (Building, Class 07A- See Notes)	5/1/2019		\$46.15	\$29.22	\$75.37
Operators (Building, Class 07A- See Notes)	5/1/2020		\$48.00	\$29.77	\$77.77
Operators (Building, Class 07A- See Notes)	5/1/2018		\$44.29	\$28.68	\$72.97
Operators (Building, Class 07A- See Notes)	5/1/2017		\$42.44	\$28.13	\$70.57
Operators (Building, Class 07B- See Notes)	5/1/2021		\$49.51	\$30.20	\$79.71
Operators (Building, Class 07B- See Notes)	5/1/2017		\$42.09	\$28.03	\$70.12
Operators (Building, Class 07B- See Notes)	5/1/2020		\$47.65	\$29.67	\$77.32
Operators (Building, Class 07B- See Notes)	5/1/2018		\$43.95	\$28.58	\$72.53
Operators (Building, Class 07B- See Notes)	5/1/2019		\$45.80	\$29.12	\$74.92
Painters Class 1 (see notes)	5/1/2017		\$27.25	\$18.17	\$45.42
Painters Class 2 (see notes)	5/1/2017		\$30.15	\$18.17	\$48.32
Painters Class 3 (see notes)	5/1/2017		\$36.25	\$18.17	\$54.42
Pile Driver Divers (Building, Heavy, Highway)	1/1/2017		\$49.13	\$17.95	\$67.08
Piledrivers	1/1/2019		\$34.30	\$19.30	\$53.60
Piledrivers	1/1/2018		\$33.55	\$18.55	\$52.10
Plasterers	6/1/2016		\$32.94	\$10.92	\$43.86
Plumbers and Steamfitters	6/1/2018		\$42.64	\$20.77	\$63.41
Plumbers and Steamfitters	6/1/2019		\$44.04	\$20.77	\$64.81
Plumbers and Steamfitters	6/1/2017		\$41.24	\$20.77	\$62.01
Roofers	6/1/2017		\$27.50	\$19.08	\$46.58
Sheet Metal Workers	5/1/2018	4/30/2019	\$30.63	\$23.73	\$54.36
Sheet Metal Workers	5/1/2017		\$30.61	\$22.95	\$53.56

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Building	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Sprinklerfitters	4/1/2018		\$38.80	\$22.74	\$61.54
Sprinklerfitters	4/1/2017		\$37.40	\$21.74	\$59.14
Terrazzo Finisher	5/1/2019		\$33.04	\$16.22	\$49.26
Terrazzo Finisher	5/1/2018		\$32.35	\$15.91	\$48.26
Terrazzo Finisher	5/1/2017		\$31.64	\$15.62	\$47.26
Terrazzo Setter	5/1/2019		\$31.81	\$19.67	\$51.48
Terrazzo Setter	5/1/2018		\$31.23	\$19.25	\$50.48
Terrazzo Setter	5/1/2017		\$30.63	\$18.85	\$49.48
Tile & Marble Finisher	5/1/2019		\$29.30	\$15.42	\$44.72
Tile & Marble Finisher	5/1/2021		\$31.32	\$15.40	\$46.72
Tile & Marble Finisher	5/1/2020		\$30.54	\$15.18	\$45.72
Tile & Marble Finisher	5/1/2017		\$28.12	\$14.60	\$42.72
Tile & Marble Finisher	5/1/2018		\$28.94	\$14.78	\$43.72
Tile Setter	5/1/2020		\$33.45	\$15.68	\$49.13
Tile Setter	5/1/2021		\$34.23	\$15.90	\$50.13
Tile Setter	5/1/2019		\$32.66	\$15.47	\$48.13
Tile Setter	5/1/2017		\$31.03	\$15.10	\$46.13
Tile Setter	5/1/2018		\$31.85	\$15.28	\$47.13
Truckdriver class 1(see notes)	5/1/2019		\$36.12	\$0.00	\$36.12
Truckdriver class 1(see notes)	5/1/2018		\$35.32	\$0.00	\$35.32
Truckdriver class 1(see notes)	5/1/2017		\$34.47	\$0.00	\$34.47
Truckdriver class 2 (see notes)	5/1/2019		\$36.19	\$0.00	\$36.19
Truckdriver class 2 (see notes)	5/1/2018		\$35.39	\$0.00	\$35.39
Truckdriver class 2 (see notes)	5/1/2017		\$34.54	\$0.00	\$34.54
Truckdriver class 3 (see notes)	5/1/2019		\$36.68	\$0.00	\$36.68
Truckdriver class 3 (see notes)	5/1/2018		\$35.88	\$0.00	\$35.88
Truckdriver class 3 (see notes)	5/1/2017		\$35.03	\$0.00	\$35.03

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Carpenter	5/1/2020		\$32.22	\$17.19	\$49.41
Carpenter	5/1/2018		\$30.75	\$15.96	\$46.71
Carpenter	5/1/2019		\$31.51	\$16.55	\$48.06
Carpenter	5/1/2021		\$33.12	\$17.74	\$50.86
Carpenters	5/1/2017		\$30.12	\$15.34	\$45.46
Carpenters	5/1/2016		\$29.67	\$14.54	\$44.21
Cement Finishers	6/1/2016		\$32.43	\$11.35	\$43.78
Electric Lineman	1/1/2018		\$55.43	\$22.48	\$77.91
Iron Workers	7/1/2016		\$29.42	\$28.78	\$58.20
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2019		\$33.76	\$28.42	\$62.18
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2018		\$33.07	\$28.42	\$61.49
Iron Workers (Bridge, Structural Steel, Ornamental, Precast, Reinforcing)	7/1/2017		\$32.32	\$28.42	\$60.74
Laborers (Class 01 - See notes)	5/1/2019		\$21.61	\$17.29	\$38.90
Laborers (Class 01 - See notes)	5/1/2018		\$20.96	\$16.79	\$37.75
Laborers (Class 01 - See notes)	5/1/2016		\$19.81	\$15.79	\$35.60
Laborers (Class 01 - See notes)	5/1/2017		\$20.36	\$16.29	\$36.65
Laborers (Class 02 - See notes)	5/1/2017		\$26.98	\$16.29	\$43.27
Laborers (Class 02 - See notes)	5/1/2019		\$28.23	\$17.29	\$45.52
Laborers (Class 02 - See notes)	5/1/2018		\$27.58	\$16.79	\$44.37
Laborers (Class 02 - See notes)	5/1/2016		\$26.43	\$15.79	\$42.22
Laborers (Class 03 - See notes)	5/1/2019		\$25.22	\$17.29	\$42.51
Laborers (Class 03 - See notes)	5/1/2016		\$23.42	\$15.79	\$39.21
Laborers (Class 03 - See notes)	5/1/2018		\$24.57	\$16.79	\$41.36
Laborers (Class 03 - See notes)	5/1/2017		\$23.97	\$16.29	\$40.26
Laborers (Class 04 - See notes)	5/1/2017		\$24.32	\$16.29	\$40.61
Laborers (Class 04 - See notes)	5/1/2019		\$25.57	\$17.29	\$42.86
Laborers (Class 04 - See notes)	5/1/2018		\$24.92	\$16.79	\$41.71
Laborers (Class 04 - See notes)	5/1/2016		\$23.77	\$15.79	\$39.56
Laborers (Class 05 - See notes)	5/1/2017		\$24.99	\$16.29	\$41.28
Laborers (Class 05 - See notes)	5/1/2019		\$26.24	\$17.29	\$43.53
Laborers (Class 05 - See notes)	5/1/2016		\$24.44	\$15.79	\$40.23
Laborers (Class 05 - See notes)	5/1/2018		\$25.59	\$16.79	\$42.38
Laborers (Class 06 - See notes)	5/1/2017		\$24.41	\$16.29	\$40.70
Laborers (Class 06 - See notes)	5/1/2016		\$23.86	\$15.79	\$39.65
Laborers (Class 06 - See notes)	5/1/2018		\$25.01	\$16.79	\$41.80
Laborers (Class 06 - See notes)	5/1/2019		\$25.66	\$17.29	\$42.95
Laborers (Class 07 - See notes)	5/1/2018		\$25.30	\$16.79	\$42.09
Laborers (Class 07 - See notes)	5/1/2019		\$25.95	\$17.29	\$43.24
Laborers (Class 07 - See notes)	5/1/2016		\$24.15	\$15.79	\$39.94
Laborers (Class 07 - See notes)	5/1/2017		\$24.70	\$16.29	\$40.99
Laborers (Class 08 - See notes)	5/1/2017		\$25.18	\$16.29	\$41.47
Laborers (Class 08 - See notes)	5/1/2016		\$24.63	\$15.79	\$40.42

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Laborers (Class 08 - See notes)	5/1/2019		\$26.43	\$17.29	\$43.72
Laborers (Class 08 - See notes)	5/1/2018		\$25.78	\$16.79	\$42.57
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2016		\$32.16	\$22.64	\$54.80
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2017		\$33.80	\$24.16	\$57.96
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2020		\$38.44	\$25.52	\$63.96
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2021		\$39.98	\$25.97	\$65.95
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2018		\$35.35	\$24.61	\$59.96
Operators (Building/Heavy, Class 01 - See Notes)	5/1/2019		\$36.90	\$25.06	\$61.96
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2018		\$37.60	\$25.27	\$62.87
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2020		\$40.69	\$26.19	\$66.88
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2017		\$36.05	\$24.82	\$60.87
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2021		\$42.24	\$26.64	\$68.88
Operators (Building/Heavy, Class 01a - See Notes)	5/1/2019		\$39.14	\$25.73	\$64.87
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2020		\$38.16	\$25.44	\$63.60
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2021		\$39.70	\$25.89	\$65.59
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2017		\$33.52	\$24.07	\$57.59
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2019		\$36.61	\$24.98	\$61.59
Operators (Building/Heavy, Class 02 - See Notes)	5/1/2018		\$35.07	\$24.52	\$59.59
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2020		\$40.41	\$26.10	\$66.51
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2021		\$41.95	\$26.56	\$68.51
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2019		\$38.87	\$25.64	\$64.51
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2017		\$35.78	\$24.72	\$60.50
Operators (Building/Heavy, Class 02a - See Notes)	5/1/2018		\$37.32	\$25.19	\$62.51
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2020		\$35.23	\$24.57	\$59.80
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2021		\$36.78	\$25.03	\$61.81
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2019		\$33.69	\$24.11	\$57.80
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2017		\$30.60	\$23.21	\$53.81
Operators (Building/Heavy, Class 03 - See Notes)	5/1/2018		\$32.15	\$23.66	\$55.81
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2017		\$29.47	\$22.88	\$52.35
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2020		\$33.65	\$24.11	\$57.76
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2021		\$35.64	\$24.69	\$60.33
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2018		\$31.01	\$23.32	\$54.33
Operators (Building/Heavy, Class 04 - See Notes)	5/1/2019		\$32.55	\$23.78	\$56.33
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2020		\$33.65	\$24.11	\$57.76
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2021		\$35.20	\$24.56	\$59.76
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2019		\$32.11	\$23.65	\$55.76
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2017		\$29.02	\$22.74	\$51.76
Operators (Building/Heavy, Class 05 - See Notes)	5/1/2018		\$30.56	\$23.20	\$53.76
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2018		\$29.68	\$22.93	\$52.61
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2017		\$28.14	\$22.49	\$50.63
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2020		\$32.78	\$23.84	\$56.62
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2019		\$31.22	\$23.40	\$54.62
Operators (Building/Heavy, Class 06 - See Notes)	5/1/2021		\$34.31	\$24.31	\$58.62
Operators (Heavy, Class 07A - See Notes)	5/1/2017		\$40.73	\$27.63	\$68.36

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Heavy, Class 07A - See Notes)	5/1/2021		\$48.14	\$29.83	\$77.97
Operators (Heavy, Class 07A - See Notes)	5/1/2018		\$42.58	\$28.18	\$70.76
Operators (Heavy, Class 07A - See Notes)	5/1/2019		\$44.43	\$28.73	\$73.16
Operators (Heavy, Class 07A - See Notes)	5/1/2020		\$46.28	\$29.27	\$75.55
Operators (Heavy, Class 07B - See Notes)	5/1/2018		\$42.23	\$28.09	\$70.32
Operators (Heavy, Class 07B - See Notes)	5/1/2019		\$44.09	\$28.63	\$72.72
Operators (Heavy, Class 07B - See Notes)	5/1/2021		\$47.79	\$29.71	\$77.50
Operators (Heavy, Class 07B - See Notes)	5/1/2020		\$45.94	\$29.17	\$75.11
Operators (Heavy, Class 07B - See Notes)	5/1/2017		\$40.38	\$27.53	\$67.91
Operators (Highway, Class 01 - See Notes)	5/1/2019		\$36.02	\$24.79	\$60.81
Operators (Highway, Class 01 - See Notes)	5/1/2020		\$37.56	\$25.24	\$62.80
Operators (Highway, Class 01 - See Notes)	5/1/2021		\$39.10	\$25.70	\$64.80
Operators (Highway, Class 01 - See Notes)	5/1/2016		\$32.16	\$22.64	\$54.80
Operators (Highway, Class 01 - See Notes)	5/1/2017		\$32.93	\$23.87	\$56.80
Operators (Highway, Class 01 - See Notes)	5/1/2018		\$34.47	\$24.33	\$58.80
Operators (Highway, Class 01a - See Notes)	5/1/2020		\$39.81	\$25.92	\$65.73
Operators (Highway, Class 01a - See Notes)	5/1/2021		\$41.35	\$26.38	\$67.73
Operators (Highway, Class 01a - See Notes)	5/1/2019		\$38.27	\$25.46	\$63.73
Operators (Highway, Class 01a - See Notes)	5/1/2017		\$35.18	\$24.56	\$59.74
Operators (Highway, Class 01a - See Notes)	5/1/2018		\$36.72	\$25.01	\$61.73
Operators (Highway, Class 02 - See Notes)	5/1/2018		\$33.30	\$23.98	\$57.28
Operators (Highway, Class 02 - See Notes)	5/1/2016		\$30.98	\$22.31	\$53.29
Operators (Highway, Class 02 - See Notes)	5/1/2020		\$36.38	\$24.90	\$61.28
Operators (Highway, Class 02 - See Notes)	5/1/2021		\$37.93	\$25.35	\$63.28
Operators (Highway, Class 02 - See Notes)	5/1/2017		\$31.75	\$23.53	\$55.28
Operators (Highway, Class 02 - See Notes)	5/1/2019		\$34.84	\$24.44	\$59.28
Operators (Highway, Class 03 - See Notes)	5/1/2020		\$35.69	\$24.69	\$60.38
Operators (Highway, Class 03 - See Notes)	5/1/2021		\$37.23	\$25.16	\$62.39
Operators (Highway, Class 03 - See Notes)	5/1/2018		\$32.59	\$23.80	\$56.39
Operators (Highway, Class 03 - See Notes)	5/1/2019		\$34.14	\$24.25	\$58.39
Operators (Highway, Class 03 - See Notes)	5/1/2017		\$31.06	\$23.32	\$54.38
Operators (Highway, Class 03 - See Notes)	5/1/2016		\$30.28	\$22.10	\$52.38
Operators (Highway, Class 04 - See Notes)	5/1/2021		\$36.77	\$25.03	\$61.80
Operators (Highway, Class 04 - See Notes)	5/1/2019		\$33.68	\$24.12	\$57.80
Operators (Highway, Class 04 - See Notes)	5/1/2018		\$32.14	\$23.66	\$55.80
Operators (Highway, Class 04 - See Notes)	5/1/2020		\$35.23	\$24.57	\$59.80
Operators (Highway, Class 04 - See Notes)	5/1/2016		\$29.82	\$21.98	\$51.80
Operators (Highway, Class 04 - See Notes)	5/1/2017		\$30.60	\$23.20	\$53.80
Operators (Highway, Class 05 - See Notes)	5/1/2019		\$33.18	\$23.97	\$57.15
Operators (Highway, Class 05 - See Notes)	5/1/2020		\$34.72	\$24.42	\$59.14
Operators (Highway, Class 05 - See Notes)	5/1/2021		\$36.26	\$24.87	\$61.13
Operators (Highway, Class 05 - See Notes)	5/1/2018		\$31.63	\$23.51	\$55.14
Operators (Highway, Class 05 - See Notes)	5/1/2016		\$29.31	\$21.83	\$51.14
Operators (Highway, Class 05 - See Notes)	5/1/2017		\$30.08	\$23.06	\$53.14

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Operators (Highway, Class 06 - See Notes)	5/1/2020		\$37.79	\$25.30	\$63.09
Operators (Highway, Class 06 - See Notes)	5/1/2019		\$36.25	\$24.85	\$61.10
Operators (Highway, Class 06 - See Notes)	5/1/2018		\$34.71	\$24.39	\$59.10
Operators (Highway, Class 06 - See Notes)	5/1/2021		\$39.33	\$25.78	\$65.11
Operators (Highway, Class 06 - See Notes)	5/1/2016		\$32.40	\$22.70	\$55.10
Operators (Highway, Class 06 - See Notes)	5/1/2017		\$33.17	\$23.94	\$57.11
Operators (Highway, Class 06/A - See Notes)	5/1/2020		\$40.04	\$25.97	\$66.01
Operators (Highway, Class 06/A - See Notes)	5/1/2021		\$41.58	\$26.43	\$68.01
Operators (Highway, Class 06/A - See Notes)	5/1/2018		\$36.96	\$25.05	\$62.01
Operators (Highway, Class 06/A - See Notes)	5/1/2019		\$38.50	\$25.52	\$64.02
Operators (Highway, Class 06/A - See Notes)	5/1/2016		\$34.65	\$23.36	\$58.01
Operators (Highway, Class 06/A - See Notes)	5/1/2017		\$35.42	\$24.59	\$60.01
Operators (Highway, Class 07/A - See Notes)	5/1/2021		\$47.08	\$29.49	\$76.57
Operators (Highway, Class 07/A - See Notes)	5/1/2020		\$45.23	\$28.94	\$74.17
Operators (Highway, Class 07/A - See Notes)	5/1/2016		\$38.56	\$25.99	\$64.55
Operators (Highway, Class 07/A - See Notes)	5/1/2018		\$41.52	\$27.84	\$69.36
Operators (Highway, Class 07/A - See Notes)	5/1/2019		\$43.37	\$28.41	\$71.78
Operators (Highway, Class 07/A - See Notes)	5/1/2017		\$39.66	\$27.31	\$66.97
Operators (Highway, Class 07/B - See Notes)	5/1/2020		\$43.81	\$28.53	\$72.34
Operators (Highway, Class 07/B - See Notes)	5/1/2018		\$40.10	\$27.44	\$67.54
Operators (Highway, Class 07/B - See Notes)	5/1/2019		\$43.37	\$28.41	\$71.78
Operators (Highway, Class 07/B - See Notes)	5/1/2021		\$45.66	\$29.08	\$74.74
Operators (Highway, Class 07/B - See Notes)	5/1/2016		\$37.17	\$25.57	\$62.74
Operators (Highway, Class 07/B - See Notes)	5/1/2017		\$38.25	\$26.89	\$65.14
Pile Driver Divers (Building, Heavy, Highway)	1/1/2017		\$49.13	\$17.95	\$67.08
Piledrivers	1/1/2018		\$33.55	\$18.55	\$52.10
Piledrivers	1/1/2019		\$34.30	\$19.30	\$53.60
Piledrivers	5/1/2018		\$30.75	\$15.96	\$46.71
Piledrivers	5/1/2019		\$31.51	\$16.55	\$48.06
Piledrivers	5/1/2020		\$32.22	\$17.19	\$49.41
Piledrivers	5/1/2021		\$33.12	\$17.74	\$50.86
Piledrivers	1/1/2017		\$32.75	\$17.95	\$50.70
Steamfitters (Heavy and Highway - Gas Distribution)	5/1/2017		\$40.98	\$32.53	\$73.51
Truckdriver class 1(see notes)	5/1/2017		\$34.47	\$0.00	\$34.47
Truckdriver class 1(see notes)	5/1/2016		\$33.57	\$0.00	\$33.57
Truckdriver class 1(see notes)	5/1/2018		\$35.32	\$0.00	\$35.32
Truckdriver class 1(see notes)	5/1/2019		\$36.12	\$0.00	\$36.12
Truckdriver class 2 (see notes)	5/1/2016		\$33.64	\$0.00	\$33.64
Truckdriver class 2 (see notes)	5/1/2017		\$34.54	\$0.00	\$34.54
Truckdriver class 2 (see notes)	5/1/2019		\$36.19	\$0.00	\$36.19
Truckdriver class 2 (see notes)	5/1/2018		\$35.39	\$0.00	\$35.39
Truckdriver class 3 (see notes)	5/1/2019		\$36.68	\$0.00	\$36.68
Truckdriver class 3 (see notes)	5/1/2017		\$35.03	\$0.00	\$35.03
Truckdriver class 3 (see notes)	5/1/2016		\$34.13	\$0.00	\$34.13

**BUREAU OF LABOR LAW COMPLIANCE
PREVAILING WAGES PROJECT RATES**

Project: 18-04863 - Heavy/Highway	Effective Date	Expiration Date	Hourly Rate	Fringe Benefits	Total
Truckdriver class 3 (see notes)	5/1/2018		\$35.88	\$0.00	\$35.88

Table of Contents

PART I - GENERAL INFORMATION 4

I.1 IFB-001.1 Purpose (Oct 2006) 4

I.2 IFB-005.1 Type of Contract (Oct. 2006) 4

I.3 IFB-008.1B Mandatory Pre-bid Conference (Oct. 2006)..... 4

I.4 IFB-008.2 Mandatory Site Visitation (Oct. 2006)..... 4

I.5 IFB-009.1 Questions (February 2012)..... 4

I.6 IFB-010.1 Addenda to the IFB (Oct. 2006)..... 4

I.7 IFB-011.1A Submission of Bids – Paper Submittal (Dec 12 2006)..... 4

I.8 IFB-024.1 Bid Protest Procedure (April 2016) 5

I.9 IFB-029.1 Prices (Dec 6 2006)..... 5

I.10 IFB-030.1 Approved Equal (Nov 2006)..... 5

I.11 IFB-031.1 Alternates (Oct 2013)..... 5

I.12 IFB-032.1 New Equipment (Nov 2006)..... 6

I.13 I-IFB-033.1 Modification or Withdrawal of Bid (Nov 2006) 6

I.14 I-IFB-034.1 Rejection of Bids (Nov 2006) 7

I.15 Submission-001.1 Representations and Authorizations (February 2017)..... 7

PART II - REQUIREMENTS 9

II.1 II-IFB-008.1a Lobbying Certification and Disclosure – Paper Submission. (Oct 2006)..... 9

II.2 II-IFB-014.1a Bid Security (Oct 2013)..... 9

II.3 II-IFB-016.1 Post-Submission Descriptive Literature (Dec 2006) 9

II.4 II-IFB-018.1a Iran Free Procurement Certification and Disclosure – Paper Submittal (November 2016) 9

PART III - SELECTION CRITERIA 11

III.1 III-IFB-001.1a Mandatory Responsiveness Requirements (Oct 2006) 11

III.2 III-IFB-006.1b Method of Award - By Lot (February 2012) 11

III.3 III-IFB-007.1 Awards (May 2011) 11

III.4 III-IFB-008.1 Tie Bids (Nov 2006) 11

III.5 III-IFB-009.1 Prompt Payment Discounts (Nov 2006) 11

III.6 III-IFB-010.1 Option for Separate Competitive Bidding Procedure (Nov 2006)..... 11

PART IV - WORK STATEMENT 12

IV.1 IV-IFB-001.1c Specifications and Statement of Work – Construction (Nov 2006) 12

PART V - CONTRACT TERMS and CONDITIONS 13

V.1 CONTRACT-001.1b Contract Terms and Conditions (Nov 30, 2006) 13

V.2 CONTRACT-002.1b Term of Contract – PO (July 2015)..... 13

V.3 CONTRACT-002.3 Extension of Contract Term (Nov 30 2006) 13

V.4 CONTRACT-003.1c Signatures - PO (July 2015) 13

V.5 CONTRACT-004.1a Definitions (Oct 2013)..... 14

V.6 CONTRACT-006.1 Independent Prime Contractor (Oct 2006)..... 14

V.7 CONTRACT-008.1a Warranty. (Oct 2006) 14

V.8 CONTRACT-009.1c Patent, Copyright, and Trademark Indemnity (Oct 2013)..... 14

V.9 CONTRACT-009.1d Ownership Rights (Oct 2006) 15

V.10 CONTRACT-010.2 Product Conformance (March 2012) 15

V.11 CONTRACT-010.3 Rejected Material Not Considered Abandoned (March 2012) 16

V.12 CONTRACT-011.1a Compliance With Law (Oct 2006) 16

V.13 CONTRACT-013.1 Environmental Provisions (Oct 2006)..... 16

V.14 CONTRACT-014.1 Post-Consumer Recycled Content (June 2016)..... 16

V.15 CONTRACT-014.3 Recycled Content Enforcement (February 2012) 16

V.16 CONTRACT-016.2 ACH Payments (Aug 2007) 16

V.17 CONTRACT-017.1 Taxes (Dec 5 2006)..... 16

V.18 CONTRACT-018.1 Assignment of Antitrust Claims (Oct 2006) 17

V.19 CONTRACT-019.1 Hold Harmless Provision (Nov 30 2006)..... 17

V.20 CONTRACT-020.1 Audit Provisions (Oct 2006) 17

V.21 CONTRACT-021.1 Default (Oct 2013) 17

V.22 CONTRACT-022.1 Force Majeure (Oct 2006)..... 19

V.23 CONTRACT-023.1a Termination Provisions (Oct 2013)..... 19

V.24 CONTRACT-024.1 Contract Controversies (Oct 2011) 19

V.25 CONTRACT-025.1 Assignability and Subcontracting (Oct 2013)..... 20

V.26 CONTRACT-026.1 Other Contractors (Oct 2006).....	21
V.27 CONTRACT-027.1 Nondiscrimination/Sexual Harassment Clause (August 2017).....	21
V.28 CONTRACT-028.1 Contractor Integrity Provisions (January 2015).....	22
V.29 CONTRACT-029.1 Contractor Responsibility Provisions (Nov 2010).....	24
V.30 CONTRACT-030.1 Americans with Disabilities Act (Oct 2006).....	25
V.31 CONTRACT-032.1 Covenant Against Contingent Fees (Oct 2006).....	25
V.32 CONTRACT-033.1 Applicable Law (Oct 2006).....	25
V.33 CONTRACT- 034.1b Integration (Nov 30 2006).....	25
V.34 CONTRACT-034.2b Order of Precedence - IFB (Dec 6 2006).....	26
V.35 CONTRACT-034.3 Controlling Terms and Conditions (Aug 2011).....	26
V.36 CONTRACT-035.1a Changes (Oct 2006).....	26
V.37 CONTRACT-045.1 Insurance - General (Dec 12 2006).....	26
V.38 CONTRACT-048.1a Performance Security (Oct 2006).....	27
V.39 CONTRACT-048.1c Contract Performance Security (May 2016).....	27
V.40 CONTRACT-048.2 Payment Bond (Oct 2006).....	28
V.41 CONTRACT-048.3 Commencement of Work (Oct 2006).....	28
V.42 CONTRACT-050.01a Steel Products Procurement Act "A" (Oct 2009).....	28
V.43 CONTRACT-050.02 Prohibition Against The Use of Certain Steel and Aluminum Products (Oct 2009).....	28
V.44 CONTRACT-050.03 Separation for Plumbing, Heating, Ventilation and Electrical Work (Oct 2006).....	29
V.45 CONTRACT-050.04 Progress Payments (Oct 2006).....	29
V.46 CONTRACT-050.05 Schedule of Progress Payments (Oct 2006).....	29
V.47 CONTRACT-050.06 Application for Progress Payments (Oct 2006).....	29
V.48 CONTRACT-050.07 Stored Materials (Oct 2006).....	29
V.49 CONTRACT-050.08 Contractor Warrants That Title To All Work, Equipment and Materials Associated with the Security System Passes Free of Liens (Oct 2006).....	30
V.50 CONTRACT-050.09 Neither Payment Nor Occupancy Accepts Work Not in Conformance with Contract Documents (Oct 2006).....	30
V.51 CONTRACT-050.10 Payments Withheld (Oct 2006).....	30
V.52 CONTRACT-050.11 Payments Made When Grounds Are Removed (Oct 2006).....	30
V.53 CONTRACT-050.12 Retainage (Oct 2006).....	30
V.54 CONTRACT-050.13 Money Withheld Due To Claims of One Prime Based on Delay of Another (Oct 2006).....	31
V.55 CONTRACT-050.14 Failure of Payment (Oct 2006).....	31
V.56 CONTRACT-050.15 Occupancy (Oct 2006).....	31
V.57 CONTRACT-050.16 Final Inspection (Oct 2006).....	31
V.58 CONTRACT-050.17 Final Payment (Oct 2006).....	31
V.59 CONTRACT-050.18 When Work Cannot Be Completed Through No Fault of Contractor (Oct 2006).....	31
V.60 CONTRACT-050.19 Final Payment Not Due Until Conditions Met (Oct 2006).....	31
V.61 CONTRACT-050.20 Release of Funds Due to Delay in Final Inspection Not Due to the Fault of the Contractor (Oct 2006).....	32
V.62 CONTRACT-050.21 Final Payment as Waiver of Claims (Oct 2006).....	32
V.63 CONTRACT-050.22 Acceptance of Final Payment as Waiver of Claims (Oct 2006).....	32
V.64 CONTRACT-050.23 Subcontractor/Supplier Agreement (Oct 2006).....	32
V.65 CONTRACT-050.24 No Contractual Relationship Between Agency and Subcontractor (Oct 2006).....	32
V.66 CONTRACT-050.25 Payment to Subcontractors (Oct 2006).....	32
V.67 CONTRACT-050.26 Contractor Disclosure of Due Date for Progress Payments From Agency (Oct 2006).....	32
V.68 CONTRACT-050.27 Time for Subcontractor Payment (Oct 2006).....	32
V.69 CONTRACT-050.28 Interest on Subcontractor Payments (Oct 2006).....	33
V.70 CONTRACT-050.29 Deficiency Items (Oct 2006).....	33
V.71 CONTRACT-050.30 Notification of Deficiency Item (Dec 6 2006).....	33
V.72 CONTRACT-050.31 Failure of Agency to Make Progress Payment (Oct 2006).....	33
V.73 CONTRACT-050.32 Insurance Receipts (Oct 2006).....	33
V.74 CONTRACT-050.33 Percentage of Completion (Oct 2006).....	33
V.75 CONTRACT-050.34 No Obligation on Part of Agency to Pay Subcontractor (Oct 2006).....	33
V.76 CONTRACT-050.35 Subcontractor Responsibility (Oct 2006).....	33
V.77 CONTRACT-050.36 Time of the Essence (Oct 2006).....	33
V.78 CONTRACT-050.37 Initial Job Conference (Oct 2006).....	33
V.79 CONTRACT-050.38 Construction and Installation Schedule (Oct 2006).....	33
V.80 CONTRACT-050.39 Delays and Extensions of Time (Oct 2006).....	33

V.81 CONTRACT-050.40 Requests for Extensions of Time (Oct 2006)..... 33
V.82 CONTRACT-050.41 Construction and Equipment Installation (Oct 2006) 33
V.83 CONTRACT-050.42 Permits and Approvals (Oct 2009)..... 34
V.84 CONTRACT-050.43 Coordination During Installation (Oct 2006)..... 34
V.85 CONTRACT-050.44 Performance by the Contractor (March 5, 2007) 34
V.86 CONTRACT-050.45 Prevailing Minimum Wages (Oct 2009) 34
V.87 CONTRACT-051.1 Notice (Dec 2006)..... 36
V.88 CONTRACT-052.1 Right to Know Law (Feb 2010) 36
V.89 CONTRACT-053.1 Enhanced Minimum Wage Provisions (July 2016) 37

PART I - GENERAL INFORMATION

PART I - GENERAL INFORMATION

I.1 IFB-001.1 Purpose (Oct 2006)

The Commonwealth of Pennsylvania (Commonwealth) is issuing this Invitation for Bids (IFB) to meet the needs of DEPARTMENT OF MILITARY AND VETERANS AFFAIRS to satisfy a need for Pre-Engineered Steel Storage Building.

I.2 IFB-005.1 Type of Contract (Oct. 2006)

If the Issuing Office enters into a contract as a result of this IFB, it will be a contract containing the Contract Terms and Conditions as shown in Part V of this IFB.

I.3 IFB-008.1B Mandatory Pre-bid Conference (Oct. 2006)

The Issuing Office will hold a pre-bid conference. The purpose of this conference is to provide opportunity for clarification of the IFB. Bidders should forward all questions before the pre-bid conference. Bidders may also ask questions at the conference. In view of the limited facilities available for the conference, Bidders should limit their representation to two individuals per Bidder. The pre-bid conference is for information only. Any answers furnished during the conference will not be official until they have been verified, in writing, by the Issuing Office. **Failure to attend the pre-bid conference shall disqualify a Bidder from consideration for the contract to be awarded from this IFB, and its bid will be returned unopened.** The pre-bid conference will be held on 07/09/2018 at 9:00AM AT 8 STAUFER INDUSTRIAL PARK, TAYLOR, PA. 18517 .

I.4 IFB-008.2 Mandatory Site Visitation (Oct. 2006)

All bidders, prior to submitting a bid, must visit the site to completely familiarize themselves with all of the agency's needs and requirements. Vendor shall contact TINA REBUCK at 717-861-8794 to schedule an appointment to visit the site.

I.5 IFB-009.1 Questions (February 2012)

All questions regarding the IFB must be submitted in writing to the email address of the Issuing Officer provided in the solicitation. While there is no set timeline for the submittal of questions, questions received within 48 hours prior to the bid due date and time will be answered at the discretion of the Commonwealth. All questions received will be answered, in writing, and such responses shall be posted to eMarketplace as an addendum to the IFB. The Issuing Officer shall not be bound by any verbal information nor shall it be bound by any written information that is not either contained within the IFB or formally issued as an addendum by the Issuing Office. The Issuing Office does not consider questions to be a protest of the specifications or of the solicitation.

I.6 IFB-010.1 Addenda to the IFB (Oct. 2006)

If the Issuing Office deems it necessary to revise any part of this IFB before the bid response date, the Issuing Office will post an addendum to its website at WWW.DMVA.PA.GOV it is the Bidder's responsibility to periodically check the website for any new information or addenda to the IFB.

I.7 IFB-011.1A Submission of Bids – Paper Submittal (Dec 12 2006)

a. Bids are requested for the item(s) described in the Invitation For Bids and all the documents referenced in the

form (collectively called the IFB). Bidders must complete and properly sign, in ink, the Invitation For Bids form. Bid prices must be typewritten or in ink. Bids that are priced or signed in pencil will be rejected.

- b. The completed and signed Invitation For Bids form, as well as the other documents required by the IFB (collectively referred to as the "Bid"), shall be enclosed and sealed in an envelope which is clearly marked "Bid" and includes the assigned Bid Invitation Number (Shown on the Invitation For Bids form) and the Bidder's vendor number as well as the bid opening date and time. It is the responsibility of each bidder to ensure that its Bid is received at the return address shown on the Invitation For Bids form ("Bid Opening Room") prior to the date and time set for the opening of bids ("Bid Opening Time"), regardless of method of delivery used. No Bid shall be considered if it arrives at the Bid Opening Room after the Bid Opening Time, regardless of reason for the late arrival. In the event that, due to inclement weather, natural disaster, or other cause, the Commonwealth offices are officially closed on the date scheduled for Bid opening, the Bid Opening date shall be automatically postponed until the next Commonwealth business day, unless the Bidders are otherwise notified by the Issuing Office. The Bid Opening time shall remain the same.

All envelopes containing Bids should be clearly marked "Bid" and should include the address of the Bid Opening Room (not the agency central processing location), the assigned Collective Number and the Bid Opening Time. Bids that are timely received in the Bid Opening Room prior to the Bid Opening Time shall be opened publicly in the presence of one or more witnesses at the time and place designated in this IFB for the Bid opening.

- c. Bids must be firm. If a Bid is submitted with conditions or exceptions or not in conformance with the terms and conditions referenced in the IFB Form, it shall be rejected. The Bid shall also be rejected if the items offered by the Bidder are not in conformance with the specifications as determined by the Commonwealth.
- d. The Bidder, intending to be legally bound hereby, offers and agrees, if this Bid is accepted, to provide the awarded items at the price(s) set forth in this Bid at the time(s) and place(s) specified.

I.8 IFB-024.1 Bid Protest Procedure (April 2016)

The Bid Protest Procedure is on the DGS website at <http://www.dgs.pa.gov/Documents/Procurement%20Forms/Handbook/Pt1/Pt%20I%20Ch%2058%20Bid%20Protests.pdf>

I.9 IFB-029.1 Prices (Dec 6 2006)

The bid submitted by the successful Bidder will be incorporated into any resulting Contract and the Bidder will be required to provide the awarded item(s) at the prices quoted in its Bid.

I.10 IFB-030.1 Approved Equal (Nov 2006)

Whenever an item is defined in this IFB by trade name and catalogue number of a manufacturer or vendor, the term 'or approved equal,' if not inserted therewith shall be implied. Any reference to a particular manufacturer's product either by trade name or by limited description is solely for the purpose of more clearly indicating the minimum standard of quality desired, except where a 'no substitute' is requested. When a 'no substitute' is requested, the Issuing Office will consider Bids for the referenced product only. The term 'or approved equal' is defined as meaning any other make which, in the sole opinion of the Issuing Office, is of such character, quality, and performance equivalence as to meet the standard of quality of products specified for which it is to be used equally as well as that specified. A Bidder quoting on a product other than the referenced product shall: a) furnish complete identification in its Bid of the product it is offering by trade name, brand and/or model number; b) furnish descriptive literature and data with respect to the substitute product it proposes to furnish; and c) indicate any known specification deviations from the referenced product.

I.11 IFB-031.1 Alternates (Oct 2013)

A Bidder who wants to offer an alternate must notify the Issuing Office in writing, at least five (5) days prior to the scheduled Bid opening, that the Bidder intends to offer an alternate in its Bid. An "alternate" is a product that deviates from the requirements of the specifications in its composition, qualities, performance, size dimension, etc. The written notification from the Bidder must include a complete description of the alternate and must identify the product's deviations from the specifications. Upon receipt of the notification, the Issuing Office will determine whether the alternate is acceptable. If the Issuing Office, in its discretion, determines that the alternate is acceptable, the Issuing Office will issue a change notice to the invitation for bids that revises the specifications. If no change notice is issued revising the specification, a Bid offering the alternate will not be considered for award. If an item or items in the IFB are designated "no substitute," this provision does not apply and no alternate may be proposed by a bidder nor will any alternate be considered by the Issuing Office.

I.12 IFB-032.1 New Equipment (Nov 2006)

Unless otherwise specified in this invitation for bids, all products offered by Bidders must be new or remanufactured. A 'new' product is one that will be used first by the Commonwealth after it is manufactured or produced. A 'remanufactured' product is one which: 1) has been rebuilt, using new or used parts, to a condition which meets the original manufacturer's most recent specifications for the item; 2) does not, in the opinion of the Issuing Office, differ in appearance from a new item; and 3) has the same warranty as a new item. Unless otherwise specified in this invitation for bids, used or reconditioned products are not acceptable. This clause shall not be construed to prohibit Bidders from offering products with recycled content, provided the product is new or remanufactured.

I.13 I-IFB-033.1 Modification or Withdrawal of Bid (Nov 2006)

- a. Bid Modification Prior to Bid Opening. Bids may be modified only by written notice or in person prior to the exact hour and date specified for Bid opening.
 - 1) If a Bidder intends to modify its Bid by written notice, the notice must specifically identify the Bid to be modified and must be signed by the Bidder. The Bidder must include evidence of authorization for the individual who signed the modification to modify the Bid on behalf of the Bidder. The Bid modification must be received in a sealed envelope. The sealed envelope must identify the assigned Collective Number and the Bid Opening Time, and should state that enclosed in the envelope is a Bid modification
 - 2) If a Bidder intends to modify its Bid in person, the individual who will modify the Bid must arrive in the Bid Opening Room prior to the Bid Opening Time, show a picture identification and provide evidence of his/her authorization to modify the Bid on behalf of the Bidder. If a Bidder intends to modify its Bid in person, the Bidder may do so only in the presence of an agency employee. (The agency employee will observe the actions taken by the individual to modify the Bid, but will not read the Bid or the modification).
- b. Bid Withdrawal Prior to Bid Opening. Bids may be withdrawn only by written notice or in person prior to the exact hour and date specified for Bid opening.
 - 1) If a Bidder intends to withdraw its Bid by written notice, the notice shall specifically identify the Bid to be withdrawn and shall be signed by the Bidder. The Bidder must include evidence of authorization for the individual who signed the bid withdrawal to withdraw the bid on behalf of the Bidder. Except as provided in Subparagraph c, below, bid withdrawals received after the exact hour and date specified for the receipt of Bids shall not be accepted.
 - 2) If a Bidder intends to withdraw its Bid in person, the individual who will withdraw the Bid must arrive in the Bid Opening Room prior to the Bid Opening Time, show a picture identification and provide evidence of his/her authorization to withdraw the Bid on behalf of the Bidder.
- c. Bid Withdrawal After Bid Opening. Bidders are permitted to withdraw erroneous Bids after Bid opening only if the following conditions are met:
 - 1) The Bidder submits a written request for withdrawal.

- 2) The Bidder presents credible evidence with the request that the reason for the lower Bid price was a clerical mistake as opposed to a judgment mistake and was actually due to an unintentional arithmetical error or an unintentional omission of a substantial quantity of work, labor, material, or services made directly in the compilation of the Bid.
 - 3) The request for relief and supporting evidence must be received by the Issuing Office within three (3) business days after Bid opening, but before award of the contract.
 - 4) The Issuing Office shall not permit a Bid withdrawal if the Bid withdrawal would result in the award of the contract on another Bid of the same Bidder, its partner, or a corporation or business venture owned by or in which the bidder has a substantial interest.
 - 5) If a Bidder is permitted to withdraw its Bid, the Bidder cannot supply any material or labor or perform any subcontract or other work agreement for the awarded contractor, without the written approval of the Issuing Office.
- d. **Firm Bid.** Except as provided above, a Bid may not be modified, withdrawn, or cancelled by any Bidder for a period of sixty (60) days following the time and date designated for Bid opening, unless otherwise specified by the Bidder in its Bid. If the lowest responsible Bidder, as determined by the Issuing Office, withdraws its Bid prior to the expiration of the award period or fails to comply with the requirements set forth in the IFB including but not limited to any requirement to submit performance or payment bonds or insurance certificates within the required time period, the Bidder shall be liable to the Commonwealth for all costs and damages associated with the re-award or re-bid including the difference between the Bidder's price and the actual cost that the Commonwealth pays for the awarded items.
- e. **Clarification and Additional Information.** After the receipt of Bids, the Issuing Office shall have the right to contact Bidders for the purpose of seeking:
- 1) Clarification of the Bid which confirms the Issuing Office's understanding of statements or information in the Bid or;
 - 2) Additional information on the items offered; provided the IFB does not require the rejection of the Bid for failure to include such information.

I.14 I-IFB-034.1 Rejection of Bids (Nov 2006)

The Issuing Office reserves the right to reject any and all Bids, to waive technical defects or any informality in Bids, and to accept or reject any part of any Bid if the best interests of the Commonwealth are thereby served.

I.15 Submission-001.1 Representations and Authorizations (February 2017)

By submitting its proposal, each Offeror understands, represents, and acknowledges that:

- A. All of the Offeror's information and representations in the proposal are material and important, and the Issuing Office may rely upon the contents of the proposal in awarding the contract(s). The Commonwealth shall treat any misstatement, omission or misrepresentation as fraudulent concealment of the true facts relating to the Proposal submission, punishable pursuant to 18 Pa. C.S. § 4904.
- B. The Offeror has arrived at the price(s) and amounts in its proposal independently and without consultation, communication, or agreement with any other Offeror or potential offeror.
- C. The Offeror has not disclosed the price(s), the amount of the proposal, nor the approximate price(s) or amount(s) of its proposal to any other firm or person who is an Offeror or potential offeror for this RFP, and the Offeror shall not disclose any of these items on or before the proposal submission deadline specified in the Calendar of Events of this RFP.

D. The Offeror has not attempted, nor will it attempt, to induce any firm or person to refrain from submitting a proposal on this contract, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.

E. The Offeror makes its proposal in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive proposal.

F. To the best knowledge of the person signing the proposal for the Offeror, the Offeror, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as the Offeror has disclosed in its proposal.

G. To the best of the knowledge of the person signing the proposal for the Offeror and except as the Offeror has otherwise disclosed in its proposal, the Offeror has no outstanding, delinquent obligations to the Commonwealth including, but not limited to, any state tax liability not being contested on appeal or other obligation of the Offeror that is owed to the Commonwealth.

H. The Offeror is not currently under suspension or debarment by the Commonwealth, any other state or the federal government, and if the Offeror cannot so certify, then it shall submit along with its proposal a written explanation of why it cannot make such certification.

I. The Offeror has not made, under separate contract with the Issuing Office, any recommendations to the Issuing Office concerning the need for the services described in its proposal or the specifications for the services described in the proposal.

J. Each Offeror, by submitting its proposal, authorizes Commonwealth agencies to release to the Commonwealth information concerning the Offeror's Pennsylvania taxes, unemployment compensation and workers' compensation liabilities.

K. Until the selected Offeror receives a fully executed and approved written contract from the Issuing Office, there is no legal and valid contract, in law or in equity, and the Offeror shall not begin to perform.

L. The Offeror is not currently engaged, and will not during the duration of the contract engage, in a boycott of a person or an entity based in or doing business with a jurisdiction which the Commonwealth is not prohibited by Congressional statute from engaging in trade or commerce.

PART II - REQUIREMENTS

PART II - REQUIREMENTS

II.1 II-IFB-008.1a Lobbying Certification and Disclosure – Paper Submission. (Oct 2006).

With respect to an award of a federal contract, grant, or cooperative agreement exceeding \$100,000 or an award of a federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000 all recipients must certify that they will not use federal funds for lobbying and must disclose the use of non-federal funds for lobbying by filing required documentation. Offerors must complete and return the Lobbying Certification Form and the Disclosure of Lobbying Activities Form, which are attached to and made a part of this IFB. The completed and signed Lobbying Certification Form and the Disclosure of Lobbying Activities Form should be submitted in the same sealed envelope with the Bid Response. Commonwealth agencies will not contract with outside firms or individuals to perform lobbying services, regardless of the source of funds.

II.2 II-IFB-014.1a Bid Security (Oct 2013)

All bidders must submit, with their bids, bid security in the amount of 10.00 % of the total contract cost. Bid security received after bid opening time and date shall cause the bid to be rejected. Bid security must be in the form of a bid bond, a specific performance bond, an irrevocable letter of credit or a certificate of deposit, all in a form acceptable to the Commonwealth, or a certified check or bank cashier's check drawn to the order of the "Commonwealth of Pennsylvania". All bid security must be conditioned for acceptance of award or faithful performance of the terms of the contract or purchase order if awarded. In lieu of one of the forms of bid security listed above, bidders may file and are encouraged to file with the Department of General Services an annual bid and performance bond, which must be in the minimum amount of \$10,000 and in sufficient amount to cover all bids which may be submitted by the bidder during a calendar year period. No other forms of bid security shall be acceptable.

If a bid bond is used, the bidder must, within ten (10 days after notification, replace the bid bond with performance security in the form of a specific performance bond, an irrevocable letter of credit, a certificate of deposit, an annual bid and performance bond, all in a form acceptable to the Commonwealth or a certified check or a bank cashier's check. Failure to replace a bid bond within this time frame may result in award to another bidder, and the bidder, who did not replace the bid bond, shall be responsible for any increase in cost.

Where the bidder does not comply with the bid, contract, or purchase order(s) the amount of the Commonwealth's damages shall be liquidated to the amount of the proceeds of the check, performance bond, letter of credit, certificate of deposit, or escrow account or the Commonwealth may, at its option, sue the bidder or its surety for the damages it has suffered for any breach of contract in which case security held by the Commonwealth shall be applied as a credit in such suit for damages. Checks deposited with the Commonwealth as a prerequisite to competitive bidding shall be placed in authorized state depositories by the Treasury Department as required by the Fiscal Code 72 P.S. Section 301. Checks shall be returned to those bidders whose bid is not accepted and to the successful bidder upon completion of performance of the contract or purchase order(s). If an irrevocable letter of credit, certificate of deposit, escrow account is submitted, the document must require the financial institution to pay the Commonwealth, upon written notice, the amount demanded by the Commonwealth up to the amount of the irrevocable letter of credit, escrow account, or certificate of deposit.

II.3 II-IFB-016.1 Post-Submission Descriptive Literature (Dec 2006)

The Commonwealth may, during its evaluation of the bids, require any bidder to submit cuts, illustrations, drawings, prints, test data sheets, specification sheets and brochures which detail construction features, design, components, materials used, applicable dimensions and any other pertinent information which the Issuing Office may require in order to evaluate the product(s) offered. The required information must be submitted within two (2) business days after notification from the Issuing Office. Failure to submit the required information prior to the expiration of the second business day after notification shall result in the rejection of the bid as non-responsive.

II.4 II-IFB-018.1a Iran Free Procurement Certification and Disclosure – Paper Submittal (November 2016)

Prior to entering a contract worth at least \$1,000,000 or more with a Commonwealth entity, a bidder must: a) certify it is not on the current list of persons engaged in investment activities in Iran created by the Pennsylvania Department of General Services (“DGS”) pursuant to Section 3503 of the Procurement Code and is eligible to contract with the Commonwealth under Sections 3501-3506 of the Procurement Code; or b) demonstrate it has received an exception from the certification requirement for that solicitation or contract pursuant to Section 3503(e). All bidders must complete and return the Iran Free Procurement Certification form, which is attached hereto and made part of this IFB. The completed and signed Iran Free Procurement Certification form must be submitted in the same sealed envelope with the Bid Response.

See the following web page for current Iran Free Procurement list:

<http://www.dgs.pa.gov/businesses/materials%20and%20services%20procurement/procurement-resources/pages/default.aspx#.WDNfJ>

PART III - SELECTION CRITERIA

PART III - SELECTION CRITERIA

III.1 III-IFB-001.1a Mandatory Responsiveness Requirements (Oct 2006)

To be eligible for selection, a bid must be:

- a. Timely received from a Bidder;
- b. Properly signed by the Bidder.

III.2 III-IFB-006.1b Method of Award - By Lot (February 2012)

It is the intent of the Commonwealth to award by lots established in the IFB or in the pricing spreadsheets to the lowest responsive and responsible bidder per lot. The Commonwealth reserves the right to award by line item or to award all lots to a single vendor if it determines that it is in the best interest of the Commonwealth to do so.

III.3 III-IFB-007.1 Awards (May 2011)

Unless all Bids are rejected, and except as otherwise provided by law, award will be made through the issuance of a contract/purchase order in accordance with the method of award. Unless otherwise specified by the Issuing Office in the IFB form the Commonwealth reserves the right to award by item or on a total Bid basis, whichever is deemed more advantageous to the Commonwealth. In cases of discrepancies in prices, the unit price will be binding unless the unit price is obviously in error and the extended price is obviously correct, in which case the erroneous unit price will be corrected. As a condition for receipt of award of a contract/purchase order, the Bidder must be registered in the Commonwealth of Pennsylvania's Vendor Master file. In order to register, bidders must visit the Pa Supplier Portal at <https://www.pasupplierportal.state.pa.us/> or call the Customer Support Center at 877-435-7363 or 717-346-2676.

III.4 III-IFB-008.1 Tie Bids (Nov 2006)

All tie bids will be broken by the Issuing Office.

III.5 III-IFB-009.1 Prompt Payment Discounts (Nov 2006)

Prompt payment discounts will not be considered in making an award. If prompt payment discounts are offered by any Bidder, however, the Issuing Office will take advantage of such offer.

III.6 III-IFB-010.1 Option for Separate Competitive Bidding Procedure (Nov 2006)

The Commonwealth reserves the right to purchase products or services covered under this Contract through a separate competitive bidding procedure, whenever Commonwealth deems it in the best interest of the Commonwealth. The right will generally be exercised only when a specific need for a large quantity of the product or service exists or when the price offered is significantly lower than the Contract price.

PART IV - WORK STATEMENT

PART IV - WORK STATEMENT

IV.1 IV-IFB-001.1c Specifications and Statement of Work – Construction (Nov 2006)

The Commonwealth is seeking bids to procure the materials and services set forth in the attached document entitled "Specifications and Statement of Work."

PART V - CONTRACT TERMS and CONDITIONS

PART V - CONTRACT TERMS and CONDITIONS

V.1 CONTRACT-001.1b Contract Terms and Conditions (Nov 30, 2006)

The Contract with the awarded bidder (who shall become the "Contractor") shall include the following terms and conditions:

V.2 CONTRACT-002.1b Term of Contract – PO (July 2015)

The term of the Contract created by the issuance of the Purchase Order shall commence on the Original PO Effective Date printed on the Purchase Order after the Purchase Order has been fully executed by the Commonwealth (signed and approved as required by Commonwealth contracting procedures and sent to the Contractor). If the Purchase Order output form does not have "Fully Executed" at the top of the first page and does not have the name of the Purchasing Agent printed in the appropriate box, the Purchase Order has not been fully executed. Subject to the other provisions of the Contract, the Contract shall end on the later of: a) complete delivery and acceptance of the awarded item(s); b) the expiration of any specified warranty and maintenance period; c) payment by the Commonwealth for the item(s) received; or d) any Expiration Date identified in the Purchase Order.

V.3 CONTRACT-002.3 Extension of Contract Term (Nov 30 2006)

The Commonwealth reserves the right, upon notice to the Contractor, to extend any single term of the Contract for up to three (3) months upon the same terms and conditions.

V.4 CONTRACT-003.1c Signatures - PO (July 2015)

The Contract shall not be a legally binding contract until the fully-executed Purchase Order has been sent to the Contractor. No Commonwealth employee has the authority to verbally direct the commencement of any work or delivery of any supply under this Purchase Order prior to the Original PO Effective Date. The Contractor hereby waives any claim or cause of action for any service or work performed prior to the Original PO Effective Date.

The Purchase Order may be electronically signed by the Commonwealth. The electronically-printed name of the Purchasing Agent, or in the case of an Auto-Purchase Order the name of the Centralized Purchasing Group, represents the signature of that individual(s) who has the authority, on behalf of the Commonwealth, to bind the Commonwealth to the terms of the Contract. If the Purchase Order output form does not have "Fully Executed" at the top of the first page and does not have the name of the Purchasing Agent, or in the case of an Auto-Purchase Order the name of the Centralized Purchasing Group, printed in the appropriate box, the Contract has not been fully executed.

The fully-executed Purchase Order may be sent to the Contractor electronically or through facsimile equipment. The electronic transmission of a Purchase Order shall require acknowledgement of receipt of the transmission by the Contractor. Receipt of the electronic or facsimile transmission of the Purchase Order shall constitute receipt of the fully-executed Purchase Order.

The Commonwealth and the Contractor specifically agree as follows:

- a. No handwritten signature shall be required in order for the Purchase Order to be legally enforceable.
- b. The parties agree that no writing shall be required in order to make the Purchase Order legally binding, notwithstanding contrary requirements in any law. The parties hereby agree not to contest the validity or enforceability of a genuine Purchase Order or acknowledgement issued electronically under the provisions of a statute of frauds or any other applicable law relating to whether certain agreements be in writing and signed by the party bound thereby. Any genuine Purchase Order or acknowledgement issued electronically, if introduced as evidence on paper in any judicial, arbitration, mediation, or administrative proceedings, will be admissible as between the parties to the same extent and under the same conditions as other business records originated and maintained in documentary form. Neither party shall contest the admissibility of copies of a genuine Purchase Order

or acknowledgements under either the business records exception to the hearsay rule or the best evidence rule on the basis that the Purchase Order or acknowledgement were not in writing or signed by the parties. A Purchase Order or acknowledgment shall be deemed to be genuine for all purposes if it is transmitted to the location designated for such documents.

c. Each party will immediately take steps to verify any document that appears to be obviously garbled in transmission or improperly formatted to include re-transmission of any such document if necessary.

V.5 CONTRACT-004.1a Definitions (Oct 2013)

As used in this Contract, these words shall have the following meanings:

a. Agency: The department, board, commission or other agency of the Commonwealth of Pennsylvania listed as the Purchasing Agency. If a COSTARS entity or external procurement activity has issued an order against this contract, that entity shall also be identified as "Agency".

b. Contracting Officer: The person authorized to administer this Contract for the Commonwealth and to make written determinations with respect to the Contract.

c. Days: Unless specifically indicated otherwise, days mean calendar days.

d. Developed Works or Developed Materials: All documents, sketches, drawings, designs, works, papers, files, reports, computer programs, computer documentation, data, records, software, samples or any other tangible material without limitation authored or prepared by Contractor as the work product covered in the scope of work for the Project.

e. Documentation: All materials required to support and convey information about the services required by this Contract. It includes, but is not necessarily restricted to, written reports and analyses, diagrams, maps, logical and physical designs, system designs, computer programs, flow charts, disks, and/or other machine-readable storage media.

f. Services: All Contractor activity necessary to satisfy the Contract.

V.6 CONTRACT-006.1 Independent Prime Contractor (Oct 2006)

In performing its obligations under the Contract, the Contractor will act as an independent contractor and not as an employee or agent of the Commonwealth. The Contractor will be responsible for all services in this Contract whether or not Contractor provides them directly. Further, the Contractor is the sole point of contact with regard to all contractual matters, including payment of any and all charges resulting from the Contract.

V.7 CONTRACT-008.1a Warranty. (Oct 2006)

The Contractor warrants that all items furnished and all services performed by the Contractor, its agents and subcontractors shall be free and clear of any defects in workmanship or materials. Unless otherwise stated in the Contract, all items are warranted for a period of one year following delivery by the Contractor and acceptance by the Commonwealth. The Contractor shall repair, replace or otherwise correct any problem with the delivered item. When an item is replaced, it shall be replaced with an item of equivalent or superior quality without any additional cost to the Commonwealth.

V.8 CONTRACT-009.1c Patent, Copyright, and Trademark Indemnity (Oct 2013)

The Contractor warrants that it is the sole owner or author of, or has entered into a suitable legal agreement concerning either: a) the design of any product or process provided or used in the performance of the Contract which is covered by a patent, copyright, or trademark registration or other right duly authorized by state or federal law or b) any copyrighted matter in any report, document or other material provided to the Commonwealth under the contract.

The Contractor shall defend any suit or proceeding brought against the Commonwealth on account of any alleged

patent, copyright or trademark infringement in the United States of any of the products provided or used in the performance of the Contract.

This is upon condition that the Commonwealth shall provide prompt notification in writing of such suit or proceeding; full right, authorization and opportunity to conduct the defense thereof; and full information and all reasonable cooperation for the defense of same.

As principles of governmental or public law are involved, the Commonwealth may participate in or choose to conduct, in its sole discretion, the defense of any such action.

If information and assistance are furnished by the Commonwealth at the Contractor's written request, it shall be at the Contractor's expense, but the responsibility for such expense shall be only that within the Contractor's written authorization.

The Contractor shall indemnify and hold the Commonwealth harmless from all damages, costs, and expenses, including attorney's fees that the Contractor or the Commonwealth may pay or incur by reason of any infringement or violation of the rights occurring to any holder of copyright, trademark, or patent interests and rights in any products provided or used in the performance of the Contract.

If any of the products provided by the Contractor in such suit or proceeding are held to constitute infringement and the use is enjoined, the Contractor shall, at its own expense and at its option, either procure the right to continue use of such infringement products, replace them with non-infringement equal performance products or modify them so that they are no longer infringing.

If the Contractor is unable to do any of the preceding, the Contractor agrees to remove all the equipment or software which are obtained contemporaneously with the infringing product, or, at the option of the Commonwealth, only those items of equipment or software which are held to be infringing, and to pay the Commonwealth: 1) any amounts paid by the Commonwealth towards the purchase of the product, less straight line depreciation; 2) any license fee paid by the Commonwealth for the use of any software, less an amount for the period of usage; and 3) the pro rata portion of any maintenance fee representing the time remaining in any period of maintenance paid for. The obligations of the Contractor under this paragraph continue without time limit. No costs or expenses shall be incurred for the account of the Contractor without its written consent.

V.9 CONTRACT-009.1d Ownership Rights (Oct 2006)

The Commonwealth shall have unrestricted authority to reproduce, distribute, and use any submitted report, data, or material, and any software or modifications and any associated documentation that is designed or developed and delivered to the Commonwealth as part of the performance of the Contract.

V.10 CONTRACT-010.2 Product Conformance (March 2012)

The Commonwealth reserves the right to require any and all Contractors to:

1. Provide certified data from laboratory testing performed by the Contractor, or performed by an independent laboratory, as specified by the Commonwealth.
2. Supply published manufacturer product documentation.
3. Permit a Commonwealth representative to witness testing at the Contractor's location or at an independent laboratory.
4. Complete a survey/questionnaire relating to the bid requirements and specifications.
5. Provide customer references.
6. Provide a product demonstration at a location near Harrisburg or the using agency location.

V.11 CONTRACT-010.3 Rejected Material Not Considered Abandoned (March 2012)

The Commonwealth shall have the right to not regard any rejected material as abandoned and to demand that the Contractor remove the rejected material from the premises within thirty (30) days of notification. The Contractor shall be responsible for removal of the rejected material as well as proper clean-up. If the Contractor fails or refuses to remove the rejected material as demanded by the Commonwealth, the Commonwealth may seek payment from, or set-off from any payments due to the Contractor under this or any other Contract with the Commonwealth, the costs of removal and clean-up. This is in addition to all other rights to recover costs incurred by the Commonwealth.

V.12 CONTRACT-011.1a Compliance With Law (Oct 2006)

The Contractor shall comply with all applicable federal and state laws and regulations and local ordinances in the performance of the Contract.

V.13 CONTRACT-013.1 Environmental Provisions (Oct 2006)

In the performance of the Contract, the Contractor shall minimize pollution and shall strictly comply with all applicable environmental laws and regulations, including, but not limited to: the Clean Streams Law Act of June 22, 1937 (P.L. 1987, No. 394), as amended 35 P.S. Section 691.601 et seq.; the Pennsylvania Solid Waste Management Act, Act of July 7, 1980 (P.L. 380, No. 97), as amended, 35 P.S. Section 6018.101 et seq. ; and the Dam Safety and Encroachment Act, Act of November 26, 1978 (P.L. 1375, No. 325), as amended , 32 P.S. Section 693.1.

V.14 CONTRACT-014.1 Post-Consumer Recycled Content (June 2016)

Except as specifically waived by the Department of General Services in writing, any products which are provided to the Commonwealth as a part of the performance of the Contract must meet the minimum percentage levels for total recycled content as specified by the Environmental Protection Agency in its Comprehensive Procurement Guidelines, which can be found at <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program> .

V.15 CONTRACT-014.3 Recycled Content Enforcement (February 2012)

The Contractor may be required, after delivery of the Contract item(s), to provide the Commonwealth with documentary evidence that the item(s) was in fact produced with the required minimum percentage of post-consumer and recovered material content.

V.16 CONTRACT-016.2 ACH Payments (Aug 2007)

- a. The Commonwealth will make contract payments through the Automated Clearing House (ACH). Within 10 days of award of the contract or purchase order, the contractor must submit or must have already submitted their ACH information within their user profile in the Commonwealth's procurement system (SRM).
- b. The contractor must submit a unique invoice number with each invoice submitted. The unique invoice number will be listed on the Commonwealth of Pennsylvania's ACH remittance advice to enable the contractor to properly apply the state agency's payment to the invoice submitted.
- c. It is the responsibility of the contractor to ensure that the ACH information contained in SRM is accurate and complete. Failure to maintain accurate and complete information may result in delays in payments.

V.17 CONTRACT-017.1 Taxes (Dec 5 2006)

The Commonwealth is exempt from all excise taxes imposed by the Internal Revenue Service and has accordingly

registered with the Internal Revenue Service to make tax free purchases under Registration No. 23-23740001-K. With the exception of purchases of the following items, no exemption certificates are required and none will be issued: undyed diesel fuel, tires, trucks, gas guzzler emergency vehicles, and sports fishing equipment. The Commonwealth is also exempt from Pennsylvania state sales tax, local sales tax, public transportation assistance taxes and fees and vehicle rental tax. The Department of Revenue regulations provide that exemption certificates are not required for sales made to governmental entities and none will be issued. Nothing in this paragraph is meant to exempt a construction contractor from the payment of any of these taxes or fees which are required to be paid with respect to the purchase, use, rental, or lease of tangible personal property or taxable services used or transferred in connection with the performance of a construction contract.

V.18 CONTRACT-018.1 Assignment of Antitrust Claims (Oct 2006)

The Contractor and the Commonwealth recognize that in actual economic practice, overcharges by the Contractor's suppliers resulting from violations of state or federal antitrust laws are in fact borne by the Commonwealth. As part of the consideration for the award of the Contract, and intending to be legally bound, the Contractor assigns to the Commonwealth all right, title and interest in and to any claims the Contractor now has, or may acquire, under state or federal antitrust laws relating to the products and services which are the subject of this Contract.

V.19 CONTRACT-019.1 Hold Harmless Provision (Nov 30 2006)

- a. The Contractor shall hold the Commonwealth harmless from and indemnify the Commonwealth against any and all third party claims, demands and actions based upon or arising out of any activities performed by the Contractor and its employees and agents under this Contract, provided the Commonwealth gives Contractor prompt notice of any such claim of which it learns. Pursuant to the Commonwealth Attorneys Act (71 P.S. Section 732-101, et seq.), the Office of Attorney General (OAG) has the sole authority to represent the Commonwealth in actions brought against the Commonwealth. The OAG may, however, in its sole discretion and under such terms as it deems appropriate, delegate its right of defense. If OAG delegates the defense to the Contractor, the Commonwealth will cooperate with all reasonable requests of Contractor made in the defense of such suits.
- b. Notwithstanding the above, neither party shall enter into any settlement without the other party's written consent, which shall not be unreasonably withheld. The Commonwealth may, in its sole discretion, allow the Contractor to control the defense and any related settlement negotiations.

V.20 CONTRACT-020.1 Audit Provisions (Oct 2006)

The Commonwealth shall have the right, at reasonable times and at a site designated by the Commonwealth, to audit the books, documents and records of the Contractor to the extent that the books, documents and records relate to costs or pricing data for the Contract. The Contractor agrees to maintain records which will support the prices charged and costs incurred for the Contract. The Contractor shall preserve books, documents, and records that relate to costs or pricing data for the Contract for a period of three (3) years from date of final payment. The Contractor shall give full and free access to all records to the Commonwealth and/or their authorized representatives.

V.21 CONTRACT-021.1 Default (Oct 2013)

a. The Commonwealth may, subject to the Force Majeure provisions of this Contract, and in addition to its other rights under the Contract, declare the Contractor in default by written notice thereof to the Contractor, and terminate (as provided in the Termination Provisions of this Contract) the whole or any part of this Contract or any Purchase Order for any of the following reasons:

- 1) Failure to begin work within the time specified in the Contract or Purchase Order or as otherwise specified;
- 2) Failure to perform the work with sufficient labor, equipment, or material to ensure the completion of the

specified work in accordance with the Contract or Purchase Order terms;

- 3) Unsatisfactory performance of the work;
- 4) Failure to deliver the awarded item(s) within the time specified in the Contract or Purchase Order or as otherwise specified;
- 5) Improper delivery;
- 6) Failure to provide an item(s) which is in conformance with the specifications referenced in the Contract or Purchase Order;
- 7) Delivery of a defective item;
- 8) Failure or refusal to remove material, or remove and replace any work rejected as defective or unsatisfactory;
- 9) Discontinuance of work without approval;
- 10) Failure to resume work, which has been discontinued, within a reasonable time after notice to do so;
- 11) Insolvency or bankruptcy;
- 12) Assignment made for the benefit of creditors;
- 13) Failure or refusal within 10 days after written notice by the Contracting Officer, to make payment or show cause why payment should not be made, of any amounts due for materials furnished, labor supplied or performed, for equipment rentals, or for utility services rendered;
- 14) Failure to protect, to repair, or to make good any damage or injury to property;
- 15) Breach of any provision of the Contract;
- 16) Failure to comply with representations made in the Contractor's bid/proposal; or
- 17) Failure to comply with applicable industry standards, customs, and practice.

b. In the event that the Commonwealth terminates this Contract or any Purchase Order in whole or in part as provided in Subparagraph a. above, the Commonwealth may procure, upon such terms and in such manner as it determines, items similar or identical to those so terminated, and the Contractor shall be liable to the Commonwealth for any reasonable excess costs for such similar or identical items included within the terminated part of the Contract or Purchase Order.

c. If the Contract or a Purchase Order is terminated as provided in Subparagraph a. above, the Commonwealth, in addition to any other rights provided in this paragraph, may require the Contractor to transfer title and deliver immediately to the Commonwealth in the manner and to the extent directed by the Contracting Officer, such partially completed items, including, where applicable, reports, working papers and other documentation, as the Contractor has specifically produced or specifically acquired for the performance of such part of the Contract or Purchase Order as has been terminated. Except as provided below, payment for completed work accepted by the Commonwealth shall be at the Contract price. Except as provided below, payment for partially completed items including, where applicable, reports and working papers, delivered to and accepted by the Commonwealth shall be in an amount agreed upon by the Contractor and Contracting Officer. The Commonwealth may withhold from amounts otherwise due the Contractor for such completed or partially completed works, such sum as the Contracting Officer determines to be necessary to protect the Commonwealth against loss.

d. The rights and remedies of the Commonwealth provided in this paragraph shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract.

e. The Commonwealth's failure to exercise any rights or remedies provided in this paragraph shall not be construed

to be a waiver by the Commonwealth of its rights and remedies in regard to the event of default or any succeeding event of default.

f. Following exhaustion of the Contractor's administrative remedies as set forth in the Contract Controversies Provision of the Contract, the Contractor's exclusive remedy shall be to seek damages in the Board of Claims.

V.22 CONTRACT-022.1 Force Majeure (Oct 2006)

Neither party will incur any liability to the other if its performance of any obligation under this Contract is prevented or delayed by causes beyond its control and without the fault or negligence of either party. Causes beyond a party's control may include, but aren't limited to, acts of God or war, changes in controlling law, regulations, orders or the requirements of any governmental entity, severe weather conditions, civil disorders, natural disasters, fire, epidemics and quarantines, general strikes throughout the trade, and freight embargoes.

The Contractor shall notify the Commonwealth orally within five (5) days and in writing within ten (10) days of the date on which the Contractor becomes aware, or should have reasonably become aware, that such cause would prevent or delay its performance. Such notification shall (i) describe fully such cause(s) and its effect on performance, (ii) state whether performance under the contract is prevented or delayed and (iii) if performance is delayed, state a reasonable estimate of the duration of the delay. The Contractor shall have the burden of proving that such cause(s) delayed or prevented its performance despite its diligent efforts to perform and shall produce such supporting documentation as the Commonwealth may reasonably request. After receipt of such notification, the Commonwealth may elect to cancel the Contract, cancel the Purchase Order, or to extend the time for performance as reasonably necessary to compensate for the Contractor's delay.

In the event of a declared emergency by competent governmental authorities, the Commonwealth by notice to the Contractor, may suspend all or a portion of the Contract or Purchase Order.

V.23 CONTRACT-023.1a Termination Provisions (Oct 2013)

The Commonwealth has the right to terminate this Contract or any Purchase Order for any of the following reasons. Termination shall be effective upon written notice to the Contractor.

a. **TERMINATION FOR CONVENIENCE:** The Commonwealth shall have the right to terminate the Contract or a Purchase Order for its convenience if the Commonwealth determines termination to be in its best interest. The Contractor shall be paid for work satisfactorily completed prior to the effective date of the termination, but in no event shall the Contractor be entitled to recover loss of profits.

b. **NON-APPROPRIATION:** The Commonwealth's obligation to make payments during any Commonwealth fiscal year succeeding the current fiscal year shall be subject to availability and appropriation of funds. When funds (state and/or federal) are not appropriated or otherwise made available to support continuation of performance in a subsequent fiscal year period, the Commonwealth shall have the right to terminate the Contract or a Purchase Order. The Contractor shall be reimbursed for the reasonable value of any nonrecurring costs incurred but not amortized in the price of the supplies or services delivered under the Contract. Such reimbursement shall not include loss of profit, loss of use of money, or administrative or overhead costs. The reimbursement amount may be paid from any appropriations available for that purpose.

c. **TERMINATION FOR CAUSE:** The Commonwealth shall have the right to terminate the Contract or a Purchase Order for Contractor default under the Default Clause upon written notice to the Contractor. The Commonwealth shall also have the right, upon written notice to the Contractor, to terminate the Contract or a Purchase Order for other cause as specified in the Contract or by law. If it is later determined that the Commonwealth erred in terminating the Contract or a Purchase Order for cause, then, at the Commonwealth's discretion, the Contract or Purchase Order shall be deemed to have been terminated for convenience under the Subparagraph a.

V.24 CONTRACT-024.1 Contract Controversies (Oct 2011)

a. In the event of a controversy or claim arising from the Contract, the Contractor must, within six months after the cause of action accrues, file a written claim with the contracting officer for a determination. The claim shall state all grounds upon which the Contractor asserts a controversy exists. If the Contractor fails to file a claim or files an untimely claim, the Contractor is deemed to have waived its right to assert a claim in any forum. At the time the claim is filed, or within sixty (60) days thereafter, either party may request mediation through the Commonwealth Office of General Counsel Dispute Resolution Program.

b. If the Contractor or the contracting officer requests mediation and the other party agrees, the contracting officer shall promptly make arrangements for mediation. Mediation shall be scheduled so as to not delay the issuance of the final determination beyond the required 120 days after receipt of the claim if mediation is unsuccessful. If mediation is not agreed to or if resolution is not reached through mediation, the contracting officer shall review timely-filed claims and issue a final determination, in writing, regarding the claim. The final determination shall be issued within 120 days of the receipt of the claim, unless extended by consent of the contracting officer and the Contractor. The contracting officer shall send his/her written determination to the Contractor. If the contracting officer fails to issue a final determination within the 120 days (unless extended by consent of the parties), the claim shall be deemed denied. The contracting officer's determination shall be the final order of the purchasing agency.

c. Within fifteen (15) days of the mailing date of the determination denying a claim or within 135 days of filing a claim if, no extension is agreed to by the parties, whichever occurs first, the Contractor may file a statement of claim with the Commonwealth Board of Claims. Pending a final judicial resolution of a controversy or claim, the Contractor shall proceed diligently with the performance of the Contract in a manner consistent with the determination of the contracting officer and the Commonwealth shall compensate the Contractor pursuant to the terms of the Contract.

V.25 CONTRACT-025.1 Assignability and Subcontracting (Oct 2013)

a. Subject to the terms and conditions of this paragraph, this Contract shall be binding upon the parties and their respective successors and assigns.

b. The Contractor shall not subcontract with any person or entity to perform all or any part of the work to be performed under this Contract without the prior written consent of the Contracting Officer, which consent may be withheld at the sole and absolute discretion of the Contracting Officer.

c. The Contractor may not assign, in whole or in part, this Contract or its rights, duties, obligations, or responsibilities hereunder without the prior written consent of the Contracting Officer, which consent may be withheld at the sole and absolute discretion of the Contracting Officer.

d. Notwithstanding the foregoing, the Contractor may, without the consent of the Contracting Officer, assign its rights to payment to be received under the Contract, provided that the Contractor provides written notice of such assignment to the Contracting Officer together with a written acknowledgement from the assignee that any such payments are subject to all of the terms and conditions of this Contract.

e. For the purposes of this Contract, the term "assign" shall include, but shall not be limited to, the sale, gift, assignment, pledge, or other transfer of any ownership interest in the Contractor provided, however, that the term shall not apply to the sale or other transfer of stock of a publicly traded company.

f. Any assignment consented to by the Contracting Officer shall be evidenced by a written assignment agreement executed by the Contractor and its assignee in which the assignee agrees to be legally bound by all of the terms and conditions of the Contract and to assume the duties, obligations, and responsibilities being assigned.

g. A change of name by the Contractor, following which the Contractor's federal identification number remains unchanged, shall not be considered to be an assignment hereunder. The Contractor shall give the Contracting Officer written notice of any such change of name.

V.26 CONTRACT-026.1 Other Contractors (Oct 2006)

The Commonwealth may undertake or award other contracts for additional or related work, and the Contractor shall fully cooperate with other contractors and Commonwealth employees, and coordinate its work with such additional work as may be required. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by Commonwealth employees. This paragraph shall be included in the Contracts of all contractors with which this Contractor will be required to cooperate. The Commonwealth shall equitably enforce this paragraph as to all contractors to prevent the imposition of unreasonable burdens on any contractor.

V.27 CONTRACT-027.1 Nondiscrimination/Sexual Harassment Clause (August 2017)

The Contractor agrees:

1. In the hiring of any employee(s) for the manufacture of supplies, performance of work, or any other activity required under the contract or any subcontract, the Contractor, each subcontractor, or any person acting on behalf of the Contractor or subcontractor shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the *Pennsylvania Human Relations Act* (PHRA) and applicable federal laws, against any citizen of this Commonwealth who is qualified and available to perform the work to which the employment relates.
2. Neither the Contractor nor any subcontractor nor any person on their behalf shall in any manner discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of the PHRA and applicable federal laws, against or intimidate any employee involved in the manufacture of supplies, the performance of work, or any other activity required under the contract.
3. The Contractor and each subcontractor shall establish and maintain a written nondiscrimination and sexual harassment policy and shall inform their employees in writing of the policy. The policy must contain a provision that sexual harassment will not be tolerated and employees who practice it will be disciplined. Posting this Nondiscrimination/Sexual Harassment Clause conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the contracted services are performed shall satisfy this requirement for employees with an established work site.
4. The Contractor and each subcontractor shall not discriminate by reason of race, gender, creed, color, sexual orientation, gender identity or expression, or in violation of PHRA and applicable federal laws, against any subcontractor or supplier who is qualified to perform the work to which the contract relates.
5. The Contractor and each subcontractor represents that it is presently in compliance with and will maintain compliance with all applicable federal, state, and local laws, regulations and policies relating to nondiscrimination and sexual harassment. The Contractor and each subcontractor further represents that it has filed a Standard Form 100 Employer Information Report (“EEO-1”) with the U.S. Equal Employment Opportunity Commission (“EEOC”) and shall file an annual EEO-1 report with the EEOC as required for employers’ subject to *Title VII* of the *Civil Rights Act of 1964*, as amended, that have 100 or more employees and employers that have federal government contracts or first-tier subcontracts and have 50 or more employees. The Contractor and each subcontractor shall, upon request and within the time periods requested by the Commonwealth, furnish all necessary employment documents and records, including EEO-1 reports, and permit access to their books, records, and accounts by the contracting agency and the Bureau of Diversity, Inclusion and Small Business Opportunities for purpose of ascertaining compliance with provisions of this Nondiscrimination/Sexual Harassment Clause.
6. The Contractor shall include the provisions of this Nondiscrimination/Sexual Harassment Clause in every subcontract so that those provisions applicable to subcontractors will be binding upon each subcontractor.
7. The Contractor’s and each subcontractor’s obligations pursuant to these provisions are ongoing from and after the effective date of the contract through the termination date thereof. Accordingly, the Contractor and each subcontractor shall have an obligation to inform the Commonwealth if, at any time during the term of the contract, it becomes aware of any actions or occurrences that would result in violation of these provisions.

8. The Commonwealth may cancel or terminate the contract and all money due or to become due under the contract may be forfeited for a violation of the terms and conditions of this Nondiscrimination/Sexual Harassment Clause. In addition, the agency may proceed with debarment or suspension and may place the Contractor in the Contractor Responsibility File.

V.28 CONTRACT-028.1 Contractor Integrity Provisions (January 2015)

It is essential that those who seek to contract with the Commonwealth of Pennsylvania ("Commonwealth") observe high standards of honesty and integrity. They must conduct themselves in a manner that fosters public confidence in the integrity of the Commonwealth contracting and procurement process.

1. DEFINITIONS. For purposes of these Contractor Integrity Provisions, the following terms shall have the meanings found in this Section:

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

b. "Consent" means written permission signed by a duly authorized officer or employee of the Commonwealth, provided that where the material facts have been disclosed, in writing, by prequalification, bid, proposal, or contractual terms, the Commonwealth shall be deemed to have consented by virtue of the execution of this contract.

c. "Contractor" means the individual or entity, that has entered into this contract with the Commonwealth.

d. "Contractor Related Parties" means any affiliates of the Contractor and the Contractor's executive officers, Pennsylvania officers and directors, or owners of 5 percent or more interest in the Contractor.

e. "Financial Interest" means either:

(1) Ownership of more than a five percent interest in any business; or

(2) Holding a position as an officer, director, trustee, partner, employee, or holding any position of management.

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

g. "Non-bid Basis" means a contract awarded or executed by the Commonwealth with Contractor without seeking bids or proposals from any other potential bidder or offeror.

2. In furtherance of this policy, Contractor agrees to the following:

a. Contractor shall maintain the highest standards of honesty and integrity during the performance of this contract and shall take no action in violation of state or federal laws or regulations or any other applicable laws or regulations, or other requirements applicable to Contractor or that govern contracting or procurement with the Commonwealth.

b. Contractor shall establish and implement a written business integrity policy, which includes, at a minimum, the requirements of these provisions as they relate to the Contractor activity with the Commonwealth and Commonwealth employees and which is made known to all Contractor employees. Posting these Contractor Integrity Provisions conspicuously in easily-accessible and well-lighted places customarily frequented by employees and at or near where the contract services are performed shall satisfy this requirement.

c. Contractor, its affiliates, agents, employees and anyone in privity with Contractor shall not accept, agree to give, offer, confer or agree to confer or promise to confer, directly or indirectly, any gratuity or pecuniary benefit to any

person, or to influence or attempt to influence any person in violation of any federal or state law, regulation, executive order of the Governor of Pennsylvania, statement of policy, management directive or any other published standard of the Commonwealth in connection with performance of work under this contract, except as provided in this contract.

d. Contractor shall not have a financial interest in any other contractor, subcontractor, or supplier providing services, labor or material under this contract, unless the financial interest is disclosed to the Commonwealth in writing and the Commonwealth consents to Contractor's financial interest prior to Commonwealth execution of the contract. Contractor shall disclose the financial interest to the Commonwealth at the time of bid or proposal submission, or if no bids or proposals are solicited, no later than the Contractor's submission of the contract signed by Contractor.

e. Contractor certifies to the best of its knowledge and belief that within the last five (5) years Contractor or Contractor Related Parties have not:

- (1) been indicted or convicted of a crime involving moral turpitude or business honesty or integrity in any jurisdiction;
- (2) been suspended, debarred or otherwise disqualified from entering into any contract with any governmental agency;
- (3) had any business license or professional license suspended or revoked;
- (4) had any sanction or finding of fact imposed as a result of a judicial or administrative proceeding related to fraud, extortion, bribery, bid rigging, embezzlement, misrepresentation or anti-trust; and
- (5) been, and is not currently, the subject of a criminal investigation by any federal, state or local prosecuting or investigative agency and/or civil anti-trust investigation by any federal, state or local prosecuting or investigative agency.

If Contractor cannot so certify to the above, then it must submit along with its bid, proposal or contract a written explanation of why such certification cannot be made and the Commonwealth will determine whether a contract may be entered into with the Contractor. The Contractor's obligation pursuant to this certification is ongoing from and after the effective date of the contract through the termination date thereof. Accordingly, the Contractor shall have an obligation to immediately notify the Commonwealth in writing if at any time during the term of the contract it becomes aware of any event which would cause the Contractor's certification or explanation to change. Contractor acknowledges that the Commonwealth may, in its sole discretion, terminate the contract for cause if it learns that any of the certifications made herein are currently false due to intervening factual circumstances or were false or should have been known to be false when entering into the contract.

f. Contractor shall comply with the requirements of the *Lobbying Disclosure Act (65 Pa.C.S. §13A01 et seq.)* regardless of the method of award. If this contract was awarded on a Non-bid Basis, Contractor must also comply with the requirements of the *Section 1641 of the Pennsylvania Election Code (25 P.S. §3260a)*.

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

h. Contractor, by submission of its bid or proposal and/or execution of this contract and by the submission of any bills, invoices or requests for payment pursuant to the contract, certifies and represents that is has not violated any of these Contractor Integrity Provisions in connection with the submission of the bid or proposal, during any contract negotiations or during the term of the contract, to include any extensions thereof. Contractor shall immediately notify the Commonwealth in writing of any actions for occurrences that would result in a violation of these Contractor Integrity Provisions. Contractor agrees to reimburse the Commonwealth for the reasonable costs of investigation incurred by the Office of the State Inspector General for investigations of the Contractor's compliance with the terms of this or any other agreement between the Contractor and the Commonwealth that results in the

suspension or debarment of the Contractor. Contractor shall not be responsible for investigative costs for investigations that do not result in the Contractor's suspension or debarment.

i. Contractor shall cooperate with the Office of the State Inspector General in its investigation of any alleged Commonwealth agency or employee breach of ethical standards and any alleged Contractor non-compliance with these Contractor Integrity Provisions. Contractor agrees to make identified Contractor employees available for interviews at reasonable times and places. Contractor, upon the inquiry or request of an Inspector General, shall provide, or if appropriate, make promptly available for inspection or copying, any information of any type or form deemed relevant by the Office of the State Inspector General to Contractor's integrity and compliance with these provisions. Such information may include, but shall not be limited to, Contractor's business or financial records, documents or files of any type or form that refer to or concern this contract. Contractor shall incorporate this paragraph in any agreement, contract or subcontract it enters into in the course of the performance of this contract/agreement solely for the purpose of obtaining subcontractor compliance with this provision. The incorporation of this provision in a subcontract shall not create privity of contract between the Commonwealth and any such subcontractor, and no third party beneficiaries shall be created thereby.

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

V.29 CONTRACT-029.1 Contractor Responsibility Provisions (Nov 2010)

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

1. The Contractor certifies, in writing, for itself and its subcontractors required to be disclosed or approved by the Commonwealth, that as of the date of its execution of this Bid/Contract, that neither the Contractor, nor any such subcontractors, are under suspension or debarment by the Commonwealth or any governmental entity, instrumentality, or authority and, if the Contractor cannot so certify, then it agrees to submit, along with its Bid/Contract, a written explanation of why such certification cannot be made.

2. The Contractor also certifies, in writing, that as of the date of its execution of this Bid/Contract it has no tax liabilities or other Commonwealth obligations, or has filed a timely administrative or judicial appeal if such liabilities or obligations exist, or is subject to a duly approved deferred payment plan if such liabilities exist.

3. The Contractor's obligations pursuant to these provisions are ongoing from and after the effective date of the Contract through the termination date thereof. Accordingly, the Contractor shall have an obligation to inform the Commonwealth if, at any time during the term of the Contract, it becomes delinquent in the payment of taxes, or other Commonwealth obligations, or if it or, to the best knowledge of the Contractor, any of its subcontractors are suspended or debarred by the Commonwealth, the federal government, or any other state or governmental entity. Such notification shall be made within 15 days of the date of suspension or debarment.

4. The failure of the Contractor to notify the Commonwealth of its suspension or debarment by the Commonwealth, any other state, or the federal government shall constitute an event of default of the Contract with the Commonwealth.

5. The Contractor agrees to reimburse the Commonwealth for the reasonable costs of investigation incurred by

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

6. The Contractor may obtain a current list of suspended and debarred Commonwealth contractors by either searching the Internet at <http://www.dgs.state.pa.us/> or contacting the:

Department of General Services
Office of Chief Counsel
603 North Office Building
Harrisburg, PA 17125
Telephone No: (717) 783-6472
FAX No: (717) 787-9138

V.30 CONTRACT-030.1 Americans with Disabilities Act (Oct 2006)

- a. Pursuant to federal regulations promulgated under the authority of The Americans With Disabilities Act, 28 C.F.R. Section 35.101 et seq., the Contractor understands and agrees that it shall not cause any individual with a disability to be excluded from participation in this Contract or from activities provided for under this Contract on the basis of the disability. As a condition of accepting this contract, the Contractor agrees to comply with the "General Prohibitions Against Discrimination," 28 C.F.R. Section 35.130, and all other regulations promulgated under Title II of The Americans With Disabilities Act which are applicable to all benefits, services, programs, and activities provided by the Commonwealth of Pennsylvania through contracts with outside contractors.
- b. The Contractor shall be responsible for and agrees to indemnify and hold harmless the Commonwealth of Pennsylvania from all losses, damages, expenses, claims, demands, suits, and actions brought by any party against the Commonwealth of Pennsylvania as a result of the Contractor's failure to comply with the provisions of Subparagraph a. above.

V.31 CONTRACT-032.1 Covenant Against Contingent Fees (Oct 2006)

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure the Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, except bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the Commonwealth shall have the right to terminate the Contract without liability or in its discretion to deduct from the Contract price or consideration, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

V.32 CONTRACT-033.1 Applicable Law (Oct 2006)

This Contract shall be governed by and interpreted and enforced in accordance with the laws of the Commonwealth of Pennsylvania (without regard to any conflict of laws provisions) and the decisions of the Pennsylvania courts. The Contractor consents to the jurisdiction of any court of the Commonwealth of Pennsylvania and any federal courts in Pennsylvania, waiving any claim or defense that such forum is not convenient or proper. The Contractor agrees that any such court shall have in personam jurisdiction over it, and consents to service of process in any manner authorized by Pennsylvania law.

V.33 CONTRACT- 034.1b Integration (Nov 30 2006)

This Contract, including the Invitation for Bids, the Contractor's bid, all referenced documents, and any Purchase Order constitutes the entire agreement between the parties. No agent, representative, employee or officer of either the Commonwealth or the Contractor has authority to make, or has made, any statement, agreement or representation, oral or written, in connection with the Contract, which in any way can be deemed to modify, add to

or detract from, or otherwise change or alter its terms and conditions. No negotiations between the parties, nor any custom or usage, shall be permitted to modify or contradict any of the terms and conditions of the Contract. No modifications, alterations, changes, or waiver to the Contract or any of its terms shall be valid or binding unless accomplished by a written amendment signed by both parties.

V.34 CONTRACT-034.2b Order of Precedence - IFB (Dec 6 2006)

In the event there is a conflict among the documents comprising this Contract, the Commonwealth and the Contractor agree on the following order of precedence: the Contract; the IFB; and the Contractor's Bid in Response to the IFB.

V.35 CONTRACT-034.3 Controlling Terms and Conditions (Aug 2011)

The terms and conditions of this Contract shall be the exclusive terms of agreement between the Contractor and the Commonwealth. All quotations requested and received from the Contractor are for obtaining firm pricing only. Other terms and conditions or additional terms and conditions included or referenced in the Contractor's quotations, invoices, business forms, or other documentation shall not become part of the parties' agreement and shall be disregarded by the parties, unenforceable by the Contractor and not binding on the Commonwealth.

V.36 CONTRACT-035.1a Changes (Oct 2006)

The Commonwealth reserves the right to make changes at any time during the term of the Contract or any renewals or extensions thereof: 1) to increase or decrease the quantities resulting from variations between any estimated quantities in the Contract and actual quantities; 2) to make changes to the services within the scope of the Contract; 3) to notify the Contractor that the Commonwealth is exercising any Contract renewal or extension option; or 4) to modify the time of performance that does not alter the scope of the Contract to extend the completion date beyond the Expiration Date of the Contract or any renewals or extensions thereof. Any such change shall be made by the Contracting Officer by notifying the Contractor in writing. The change shall be effective as of the date of the change, unless the notification of change specifies a later effective date. Such increases, decreases, changes, or modifications will not invalidate the Contract, nor, if performance security is being furnished in conjunction with the Contract, release the security obligation. The Contractor agrees to provide the service in accordance with the change order. Any dispute by the Contractor in regard to the performance required by any notification of change shall be handled through Contract Controversies Provision.

V.37 CONTRACT-045.1 Insurance - General (Dec 12 2006)

The Contractor is required to have in place during the term of the Contract and any renewals or extensions thereof, the following types of insurance, issued by companies acceptable to the Commonwealth and authorized to conduct such business under the laws of the Commonwealth of Pennsylvania:

- A. **Worker's Compensation Insurance** for all of the Contractor's employees and those of any subcontractor, engaged in work at the site of the project as required by law.
- B. **Public Liability and Property Damage Insurance** to protect the Commonwealth, the Contractor, and any and all subcontractors from claims for damages for personal injury (including bodily injury), sickness or disease, accidental death and damage to property including the loss of use resulting from any property damage, which may arise from the activities performed under the Contract or the failure to perform under the Contract, whether such performance or non-performance be by the Contractor, by any subcontractor, or by anyone directly or indirectly employed by either. The minimum amounts of coverage shall be \$250,000 per person and \$1,000,000 per occurrence for bodily injury, including death, and \$250,000 per person and \$1,000,000 per occurrence for property damage. Such policies shall be occurrence rather than claims-made policies and shall not contain any endorsements or any other form designated to limit and restrict any action by the Commonwealth, as an additional insured, against the insurance coverage in regard to work performed

for the Commonwealth.

Prior to commencement of the work under the Contract and at each insurance renewal date during the term of the Contract, the Contractor shall provide the Commonwealth with current certificates of insurance. These certificates or policies shall name the Commonwealth as an additional insured and shall contain a provision that the coverage's afforded under the policies will not be cancelled or changed until at least thirty (30) days written notice has been given to the Commonwealth.

The Commonwealth shall be under no obligation to obtain such certificates from the Contractor(s). Failure by the Commonwealth to obtain the certificates shall not be deemed a waiver of the Contractor's obligation to obtain and furnish certificates. The Commonwealth shall have the right to inspect the original insurance policies.

V.38 CONTRACT-048.1a Performance Security (Oct 2006)

- a. The Contractor must furnish within ten (10) days after award of the purchase order the following:
 - (1) For purchase orders between \$25,000.00 and \$100,000.00, performance security in an amount equal to at least 50 percent of the purchase order price.
 - (2) For purchase orders in excess of \$100,000, a performance bond at one hundred percent of the contract amount, conditioned upon the faithful performance of the contract in accordance with the plans, specifications and conditions of the contract. The bond shall be solely for the protection of the contracting body which awarded the contract.
- b. Failure to furnish the required performance security within the required ten (10) days time frame shall be considered a failure to perform a contractual obligation which may result in termination of the purchase order and award to another supplier. In the event of termination and re-award for failure to provide performance security, the contractor shall be responsible for any increase in cost to the Commonwealth.
- c. Where the Contractor does not comply with the requirements of the purchase order, the amount of the performance security shall be paid to the Commonwealth as liquidated damages for the contractor's failure to comply, or the Commonwealth may, at its sole option, sue the contractor or its surety for the damages it has suffered for any breach of contract, in which case security held by the Commonwealth shall be applied as a credit in such suit for damages.
- d. For purchase orders under \$25,000.00, no performance security will be required.

V.39 CONTRACT-048.1c Contract Performance Security (May 2016)

The Contractor is required, no later than ten (10) days after the Contract Effective Date, to submit performance security in the amount of 100.00 % of the total price of the contract. Performance security must be in the form of a specific performance bond, an irrevocable letter of credit or a certificate of deposit, all in a form acceptable to the Commonwealth, or a certified check or a bank cashier's check drawn to the order of the "Commonwealth of Pennsylvania". All performance security shall be conditioned for faithful performance of the contract or purchase order(s). Failure to provide performance security within ten (10) days after the Contract Effective Date shall be considered an event of default.

Where the Contractor does not comply with the Contract or a purchase order, the amount of the Commonwealth's damages shall be liquidated to the amount of the proceeds of the check, performance bond, letter of credit, certificate of deposit, or escrow account or the Commonwealth may, at its option, bring legal action against the Contractor or its surety for the damages it has suffered for any default, in which case security held by the Commonwealth shall be applied as a credit in such suit for damages. Checks deposited with the Commonwealth as security shall be placed in authorized state depositories by the Treasury Department as required by the Fiscal Code, 72 P.S. Section 301. Checks shall be returned to contractors upon completion of the performance of their obligations under the Contract or purchase order. If an irrevocable letter of credit, certificate of deposit, or escrow account is submitted, the document must require the financial institution to pay to the Commonwealth, upon written notice, the amount demanded by the Commonwealth up to the amount of the irrevocable letter of credit, escrow account, or certificate

of deposit.

V.40 CONTRACT-048.2 Payment Bond (Oct 2006)

- a. For purchase orders in excess of \$100,000.00, the awarded contractor must furnish a payment bond in an amount equal to 100 percent of the contract amount. The payment bond must be executed by a surety company authorized to do business in the Commonwealth and made payable to the Commonwealth.
- b. The payment bond shall be conditioned on the prompt payment for all materials furnished or labor supplied or performed in the performance of the work. Labor and materials include public utility services and reasonable rentals of equipment for the periods when the equipment rented is actually used at the site.
- c. A payment bond shall be solely for the protection of claimants supplying labor and materials to the awarded contractor, or to any of its subcontractors, in the performance of the work provided for in the contract.
- d. The awarded contractor must furnish the payment bond within ten (10) days after award of the purchase order.

V.41 CONTRACT-048.3 Commencement of Work (Oct 2006)

The Contractor should not begin work until all required security and insurance certificates, if required, have been submitted to and approved by the Commonwealth. If required security and insurance certificates are not submitted within required time frames, the Commonwealth has the right to cancel this order and surcharge your company for any increase in price.

V.42 CONTRACT-050.01a Steel Products Procurement Act "A" (Oct 2009)

In the performance of any contract awarded pursuant to this invitation to bid, the contractor and all subcontractors, materialmen, and suppliers shall use only "steel products" as defined in the Steel Products Procurement Act, Act of March 3, 1978, P.L. 6, No. 3, 73 P.S. §§ 1881-1887 ("SPPA"), including products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more of such operations, from steel made in the United States by the open hearth, basic oxygen, electric furnace, Bessemer or other steel making process. The definition of steel products also includes cast iron products, as well as machinery and equipment listed in United States Department of Commerce Standard Industrial Classification 25 (furniture and fixture), 35 (machinery, except electrical) and 37 (transportation equipment) and made of, fabricated from, or containing steel components. If a product contains both foreign and United States steel, such products shall be determined to be a United States Steel product only if at least 75% of the cost of the articles, materials and supplies have been mined, produced or manufactured, as the case may be, in the United States. Transportation equipment shall be determined to be a United States steel product only if it complies with Section 165 of Public Law 97-424 (96 Stat. 2136).

The SPPA provides that, when a contractor supplies unidentified steel products for a public agency's use as part of any Public Works Project, before a public agency may authorize, provide for, or make payment, the Contractor must provide documentation including, but not limited to, invoices, bills of lading and mill certification that the steel was melted and manufactured in the United States before a public agency may authorize, provide for, or make payment. If a steel product is identifiable on its face, the contractor must submit certification which satisfies the purchasing agency that the contractor has fully complied with this provision.

If a purchasing agency has made any payment to the Contractor and later finds that the Contractor did not comply with the SPPA's requirements, the purchasing agency may recover such payment directly from the Contractor. The Contractor shall not deny repayment unless it can demonstrate that it has complied with the SPPA's requirements.

The SPPA also provides that any person who willfully violates any of its provisions shall be prohibited from submitting any bids to any public agency for a period of five years after the date of the determination that a violation has occurred. If the Contractor violates the SPPA, the public agency may debar the Contractor from performing any work or supplying any materials to a public agency for five years after the date of the determination that a violation has occurred.

The Contractor shall include these provisions regarding the SPPA's requirements in its subcontracts and supply contracts, so that the SPPA's provisions of the Act shall be binding upon each subcontractor and supplier.

V.43 CONTRACT-050.02 Prohibition Against The Use of Certain Steel and Aluminum Products (Oct 2009)

In accordance with the Trade Practices Act of July 23, 1968 P.L. 686 (71 P.S. §773.101 et seq.), the Contractor

cannot and shall not use or permit to be used in the work any aluminum or steel products made in a foreign country which is listed below as a foreign country which discriminates against aluminum or steel products manufactured in Pennsylvania. The countries of Brazil , South Korea , Spain and Argentina have been found to discriminate against certain products manufactured in Pennsylvania . Therefore, the purchase or use of those countries' products, as listed below, is not permitted.

1. BRAZIL: Welded carbon steel pipes and tubes; carbon steel wire rods; tool steel; certain steel products, including hot-rolled stainless steel bar; stainless steel wire rod and cold-formed stainless steel bar; pre-stressed concrete steel wire strand; hot-rolled carbon steel plate in coil; hot-rolled carbon steel sheet and cold-rolled carbon steel sheet.
2. SPAIN: Certain stainless steel products, including stainless steel wire rod, hot-rolled stainless steel bars and cold-formed stainless steel bars; pre-stressed concrete steel wire strands; certain steel products, including hot-rolled steel plate, cold-rolled carbon steel plate, carbon steel structural shapes, galvanized carbon steel sheet, hot-rolled carbon steel bars and cold-formed carbon steel bars.
3. SOUTH KOREA : Welded carbon steel pipes and tubes hot-rolled carbon steel plate; hot-rolled carbon steel sheet and galvanized steel sheet.
4. ARGENTINA : Carbon steel wire rod and cold-rolled carbon steel sheet.

Penalties for violations of this paragraph may be found in the Trade Practices Act, which penalties include becoming ineligible for public works contracts for a period of three years.

Note: This provision in no way relieves the Contractor of its responsibility to comply with those provisions of this Agreement that prohibit the use of foreign-made steel and cast iron products.

V.44 CONTRACT-050.03 Separation for Plumbing, Heating, Ventilation and Electrical Work (Oct 2006)

The contract shall be subject to the provisions of the Act of May 1, 1913 (P.L. 155, No. 104); 71 P.S. Section 1618.

V.45 CONTRACT-050.04 Progress Payments (Oct 2006)

Based upon Applications for Payment submitted to the Agency by the Contractor, the Agency will make progress payments on account of the Price to the Contractor, as provided below.

V.46 CONTRACT-050.05 Schedule of Progress Payments (Oct 2006)

Within thirty (30) days of the Effective Date of this Agreement and prior to the first Application for Payment, the Contractor shall submit to the Agency for approval, a detailed Contract Breakdown Sheet, indicating a Schedule of Progress Payments for all work, equipment, and materials required for the acquisition and installation of the Security System (the "Work"). The total amount to be paid according to the Schedule of Progress Payments must equal the Price. The progress payments on the Schedule must be divided so as to facilitate payments to subcontractors, and be prepared in such form as specified by the Agency and supported by such data required by the Agency to substantiate its correctness. Each item in the Schedule of Progress Payments shall include its proper share of any overhead and profit. When more than one building or structure is included in a project, the contractor shall submit a Contract Breakdown Sheet, indicating Unit Prices for all items of Work within the separate buildings or structures. The Schedule of Progress Payments, when approved by the Agency, will be used as a basis for the Contractor's Application for Payments. This schedule may also be used by the Agency to determine the cost or credit to the Agency resulting from the changes in the Work.

V.47 CONTRACT-050.06 Application for Progress Payments (Oct 2006)

During the progress of the Work, in accordance with the Agreement, the Contractor shall prepare periodic estimates of the value of the Work performed and shall submit to the Agency itemized Applications for Payment. The applications shall be supported by data, as required by the Agency substantiating the Contractor's right to payment.

V.48 CONTRACT-050.07 Stored Materials (Oct 2006)

Upon the determination of the Agency as to reasonableness, payments may be made to the Contractor on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site, or at some other location agreed upon in writing. Contractor shall remain responsible for all losses of materials and equipment, which remain under its custody and control, regardless of the exclusions in the insurance policies.

Upon the determination of the Agency as to reasonableness, payments may be made to the Contractor on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site, or at some other

location agreed upon in writing. Contractor shall remain responsible for all losses of materials and equipment, which remain under its custody and control, regardless of the exclusions in the insurance policies.

V.49 CONTRACT-050.08 Contractor Warrants That Title To All Work, Equipment and Materials Associated with the Security System Passes Free of Liens (Oct 2006)

The Contractor warrants and guarantees that title to all Work covered by an Application for Payment, whether incorporated in the Security System or not, will pass to the Agency upon the receipt of such payment by the Contractor, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in these Sections as "liens"; and that no work, materials or equipment covered by an Application for Payment was acquired by the Contractor, or by any other person performing the Work at the site of furnishing materials and equipment for the Security System, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

V.50 CONTRACT-050.09 Neither Payment Nor Occupancy Accepts Work Not in Conformance with Contract Documents (Oct 2006)

No Application for Payment, nor any progress payment, nor any partial or entire use of occupancy of the Security System by the Agency constitutes an acceptance of any Work not in accordance with the Agreement.

V.51 CONTRACT-050.10 Payments Withheld (Oct 2006)

The Agency may decline to approve an Application for Payment in whole or in part if the Work has not progressed to the point indicated, or the quality and quantity of the Work is not in accordance with the Agreement. The Agency may also decline to approve any Applications for Payment, because of subsequently discovered evidence or subsequent inspections, which may nullify the whole or any part of any Application for Payment previously issued to such extent as may be necessary in its opinion to protect the agency from loss because of:

- (1) Defective work not remedied;
- (2) Claims filed or reasonable evidence indicating probable filing of claims;
- (3) Reasonable doubt that the work can be completed for the unpaid balance of the contract sum;
- (4) Damages to another prime contractor or subcontractor;
- (5) Reasonable indication that the Work will not be completed within the contract time;
- (6) Unsatisfactory prosecution of the Work by the Contractor, or
- (7) Failure of the Contractor to pay subcontractors or suppliers. It is within the Agency's discretion to withhold payment because of the Contractor's failure to pay subcontractors or suppliers. The failure to withhold payment for this reason does not give rise to a cause of action on the part of the subcontractor or supplier.
- (8) Failure of the Contractor to maintain insurance.

The Agency will notify the Contractor of the reason for withholding payment within fifteen (15) days of its receipt of the Application for Payment.

V.52 CONTRACT-050.11 Payments Made When Grounds Are Removed (Oct 2006)

When the grounds set out in the preceding subsection are removed, payment shall be made for amounts withheld because of them.

V.53 CONTRACT-050.12 Retainage (Oct 2006)

In computing the amount payable in accordance with this Article on any current Application for Payment:

- (1) Ten percent (10%) [*six percent (6%) for the Department of General Services*] of the then total applications for Payment shall be deducted and retained by the Agency until fifty percent (50%) of the Work called for by the Agreement has been satisfactorily completed and all Contract obligations have been met as determined by the Agency.
- (2) Upon completion of fifty percent (50%) of the work called for by the Agreement, the Work having been satisfactorily completed and all Agreement obligations having been met as determined by the Agency, the

retainage withheld by the Agency shall be reduced to three percent (3%) of the original Agreement sum.

V.54 CONTRACT-050.13 Money Withheld Due To Claims of One Prime Based on Delay of Another (Oct 2006)

In the event a dispute arises between the Agency and another contractor, which dispute is based upon increased costs claimed by the other contractor occasioned by delays or other actions of Contractor, additional retainage in the sum of one and one-half (1-1/2) times the amount of any possible liability may be withheld from the Contractor until such time as a final resolution is agreed to by all parties directly or indirectly involved, unless the Contractor furnishes a bond satisfactory to the Agency to indemnify the Agency against the claim.

V.55 CONTRACT-050.14 Failure of Payment (Oct 2006)

If the Agency fails to make payment to the Contractor within sixty (60) days after receipt of the Application for Payment, the Contractor may file a claim with the Agency contracting officer. Contractor is not entitled to stop work in any event.

V.56 CONTRACT-050.15 Occupancy (Oct 2006)

The Agency may use and occupy any completed or partially completed portions of the Work, whether or not the time may have expired for completing the entire Work or said portions of Work. Such use or occupancy shall not be deemed an acceptance of the portion of the Work so taken or used. Prior to such use or occupancy, an inspection of the Work to be occupied by the Agency shall be made by the Agency to determine if it is in conformity with the Agreement. Any damage subsequent to the inspection due solely to the use and occupancy of the completed portion is not the responsibility of the Contractor.

V.57 CONTRACT-050.16 Final Inspection (Oct 2006)

When the Contractor submits in writing to the Agency a request for a final inspection and an application for final payment, final inspection will be made within 30 days of the receipt of the request for final inspection and application for final payment. If the Work is substantially completed, the Agency will issue a certificate of final completion and final certificate for payment and the Agency will make payment in full within forty-five (45) days except as set out in this Section, less one and one-half times the amount required to complete any then-remaining uncompleted minor items. The Agency shall list in detail each uncompleted item and a reasonable cost of completion. Final payment of any amount withheld for the completion of minor items shall be paid upon completion of the items in the list. The Contractor shall complete all items (items to be corrected and/or completed) within thirty (30) days after the date of final inspection or show just cause to the satisfaction of the Agency why they cannot be completed. If the Contractor does not complete the punch list items within thirty (30) days, or show just cause to the satisfaction of the Agency why they cannot be completed, the Agency may correct those items and deduct the cost of completion from the amount retained.

V.58 CONTRACT-050.17 Final Payment (Oct 2006)

Final payment, constituting the entire unpaid balance of the Contract sum, will be paid by the Agency to the Contractor within thirty (30) days after final inspection of the installed Security System, if the Contract has been fully performed, and a final application for payment has been submitted.

V.59 CONTRACT-050.18 When Work Cannot Be Completed Through No Fault of Contractor (Oct 2006)

When, upon final inspection, items of Work cannot be completed because of unseasonable considerations, such as bituminous paving, etc., or, if the Agency agrees that particular items need not be completed until a subsequent date, or, if the Agency delays the final Application for Payment for any unreasonable length of time, the Agency may agree to release payment to the Contractor, less one and one-half (1-1-2) times the dollar value of uncompleted parts of items of the type described in this subsection.

V.60 CONTRACT-050.19 Final Payment Not Due Until Conditions Met (Oct 2006)

Neither the final payment nor the remaining retained percentage becomes due until the Contractor submits to the Agency:

- (1) An affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Agency or its property might in any way be responsible, have been paid or otherwise satisfied;
- (2) Statements of surety and the Contractor's certificate on forms satisfactory to the Agency as to Contractor's payment of all claims for labor, materials, equipment rentals and public utility services; and
- (3) If required by the Agency, other data establishing payment or satisfaction of all such obligations, such as

receipts, releases and waivers of liens arising out of the Agreement, to the extent and in such form as is designated by the Agency.

If any subcontractor refuses to furnish a release or waiver, as required by the Agency, the Contractor may furnish a bond satisfactory to the Agency to indemnify the Agency against any such lien. If any such lien remains unsatisfied after all payments are made, the Contractor shall refund to the Agency all moneys that the latter may be compelled to pay in discharging such liens, including all costs and reasonable attorney's fees.

V.61 CONTRACT-050.20 Release of Funds Due to Delay in Final Inspection Not Due to the Fault of the Contractor (Oct 2006)

If, after final inspection of the work, final completion is materially delayed through no fault of the Contractor, the Agency shall make payment of the balance due for that portion of the Work fully completed and accepted. Such payment will not terminate the Agreement. If the remaining balance of work not fully completed or corrected is less than the retainage stipulated in Section 8.10, and, if bonds have been furnished as required, the Contractor must submit to the Agency, prior to certification of the payment, the written consent of the surety to the payment of the balance due for that portion of the work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it does not constitute a waiver of any of the Agency's claims against the Contractor.

V.62 CONTRACT-050.21 Final Payment as Waiver of Claims (Oct 2006)

The making of final payment constitutes a waiver of all claims by the Agency, except those arising from:

- (1) Unsettled claims;
- (2) Faulty or defective work or material;
- (3) Failure of the work or material to comply with the requirements of the Contract Documents; or
- (4) Terms of any special guarantees required by the Contract Documents.

V.63 CONTRACT-050.22 Acceptance of Final Payment as Waiver of Claims (Oct 2006)

The acceptance of final payment by the Contractor constitutes a waiver of all claims by the Contractor.

V.64 CONTRACT-050.23 Subcontractor/Supplier Agreement (Oct 2006)

All Work performed for the Contractor by a subcontractor or supplier of materials shall be pursuant to an appropriate agreement between the Contractor and the subcontractor or supplier (and where appropriate between subcontractor and sub-subcontractors). The agreement must be a fully executed agreement and include the amount of subcontractor, sub-subcontractor or supplier is to be paid for the work to be performed or for the materials to be supplied.

V.65 CONTRACT-050.24 No Contractual Relationship Between Agency and Subcontractor (Oct 2006)

Nothing contained in the Contract Documents creates any contractual relation between the Agency and any subcontractor, sub-subcontractor or supplier.

V.66 CONTRACT-050.25 Payment to Subcontractors (Oct 2006)

Performance by a subcontractor in accordance with the provisions of the contract entitles the Subcontractor to payment from the party with which the Subcontractor has contracted. For purposes of this section, the contract between the Contractor and Subcontractor is presumed to incorporate the terms of the contract between the Contractor and the agency.

V.67 CONTRACT-050.26 Contractor Disclosure of Due Date for Progress Payments From Agency (Oct 2006)

The Contractor shall disclose to a subcontractor, before a subcontract is executed, the due date for receipt of progress payments from the Agency. If the Contractor fails to accurately disclose the due date to a subcontractor, the Contractor must pay the subcontractor as though the agency has paid the Contractor within forty-five (45) days of receipt of its application for payment. This section does not apply to a change in due dates because of conditions beyond the Contractor's control, including, but not limited to, design changes, change orders or delays in construction due to weather conditions.

V.68 CONTRACT-050.27 Time for Subcontractor Payment (Oct 2006)

When a subcontractor has performed in accordance with the provisions of the contract, the Contractor shall pay to the subcontractor, the full or proportional amount received for each subcontractor's work and material, based on work completed or services provided under the contract, within fourteen (14) days of receipt of a progress payment.

V.69 CONTRACT-050.28 Interest on Subcontractor Payments (Oct 2006)

If any progress payment is not made to a subcontractor by the due date the Contractor shall pay to the subcontractor, in addition to the amount due, interest as computed at the rate determined by the Secretary of Revenue for interest payments on overdue taxes or the refund of taxes as provided in Sections 806 and 806.1 of the Act of April 9, 1929 (P.L. 343, No. 176), known as "The Fiscal Code," and any subsequent amendments to those sections.

V.70 CONTRACT-050.29 Deficiency Items (Oct 2006)

The Contractor may withhold payment from any subcontractor responsible for a deficiency item. The Contractor shall pay any subcontractor according to the provisions of this section for any item which appears on the application for payment and which has been satisfactorily completed.

V.71 CONTRACT-050.30 Notification of Deficiency Item (Dec 6 2006)

If a Contractor withholds payment from a subcontractor for a deficiency item, it must notify the subcontractor or supplier and the contracting body of the reasons within 15 calendar days of the date after receipt of the notice of the deficiency item from the owner.

V.72 CONTRACT-050.31 Failure of Agency to Make Progress Payment (Oct 2006)

If the Agency fails to issue an approved Application for Payment for any cause which is the fault of the Contractor and not the fault of a particular subcontractor, the Contractor shall pay that subcontractor, upon demand made by the subcontractor at any time after the approved Application for Payment should otherwise have been issued, for its work to the extent completed, less the retained percentage.

V.73 CONTRACT-050.32 Insurance Receipts (Oct 2006)

The Contractor shall pay each subcontractor a just share of any insurance moneys received by the Contractor, and shall require each subcontractor to make similar payments to its sub-subcontractors.

V.74 CONTRACT-050.33 Percentage of Completion (Oct 2006)

The Agency may, on request, furnish to any subcontractor, if practicable, information regarding percentages of completion certified to the Contractor on account of work done by such subcontractor.

V.75 CONTRACT-050.34 No Obligation on Part of Agency to Pay Subcontractor (Oct 2006)

The Agency shall have no obligation to pay, or to see to the payment of, any moneys to any subcontractor except as may otherwise be required by law.

V.76 CONTRACT-050.35 Subcontractor Responsibility (Oct 2006)

If the Contractor enters into any agreements under this Contract with subcontractors or suppliers, which are currently suspended or debarred by the Commonwealth, or who become suspended or debarred by the Commonwealth during the term of this Contract or any extensions or renewals of it, the Agency may require the Contractor to terminate such contract.

V.77 CONTRACT-050.36 Time of the Essence (Oct 2006)

All time limits stated in the Purchase Order are of the essence.

V.78 CONTRACT-050.37 Initial Job Conference (Oct 2006)

The initial job conference will be held within thirty days from the Effective Date of the Purchase Order.

V.79 CONTRACT-050.38 Construction and Installation Schedule (Oct 2006)

Construction and equipment installation shall proceed in accordance with the Construction and Installation schedule approved by Agency and attached to the Purchase Order.

V.80 CONTRACT-050.39 Delays and Extensions of Time (Oct 2006)

If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the Agency or by any Agency employee or by changes ordered in the Work, by labor disputes, fire, unavoidable casualties, or by delay due to suspension of Work, or by any cause that the Agency determines may justify the delay, then the time may be extended, by the approval of the Agency, of an extension of time for such reasonable time as the Agency may determine. The Agency will respond to the request for Extension of Time within twenty (20) days of its receipt.

V.81 CONTRACT-050.40 Requests for Extensions of Time (Oct 2006)

All requests for extensions of time shall be made to the Agency in writing. All such requests must be filed within ten days of the end of the event or issue, which caused the alleged delay.

V.82 CONTRACT-050.41 Construction and Equipment Installation (Oct 2006)

a. The Contractor shall be responsible for the professional and technical accuracy, of all construction and services

performed in the installation of the General Construction and Electrical, whether by the Contractor or its subcontractors or others on its behalf, throughout the term of this Contract.

- b. The Contractor shall provide overall coordination, management, and responsibility, and shall assure that all Work is completed in a good and workmanlike manner. Subject to other provisions of this Contract, the Contractor will act as a turn-key general contractor assuming total responsibility for the procurement of labor and material for installation and start-up of the General Construction and Electrical, including: selecting subcontractors; awarding subcontracts; receiving and evaluating submitted drawings on the equipment; progress inspections during installation; developing and presenting subcontractor punch lists after each inspection; receiving and evaluating record drawings; and operation and maintenance manuals from subcontractors; providing for training of Agency personnel on proper operation of the newly installed General Construction and Electrical ; and final inspection and recommendation for approval to the Agency for acceptance of the General Construction and Electrical
- c. The Contractor shall conduct a thorough and systematic performance test of each element and total system of the installed General Construction and Electrical prior to acceptance of the General Construction and Electrical by Agency. The Contractor shall provide notice to the Agency of the scheduled test(s) and the Agency and/or its designees shall have the right to be present at any or all such tests conducted by the Contractor and/or manufacturers of the equipment. The Contractor shall be responsible for correcting and/or adjusting all deficiencies in systems and equipment operations that may be observed during performance testing.

V.83 CONTRACT-050.42 Permits and Approvals (Oct 2009)

The Contractor shall be responsible for obtaining all necessary permits and approvals for completion of the project and shall pay any and all permit fees. Agency shall use its best efforts to assist the Contractor in obtaining all necessary permits and approvals. In no event shall Agency be directly responsible for payment of any permit fees. The Contractor shall furnish copies of each permit or license which is required to perform the work to the Agency before the Contractor commences the portion of the work requiring such permit or license.

V.84 CONTRACT-050.43 Coordination During Installation (Oct 2006)

The Agency and the Contractor shall coordinate the activities of the Contractor's equipment installers with those of the Agency, its employees, and agents. The Contractor shall not commit or permit any act which will interfere with the performance of business activities conducted by the Agency or its employees without prior written approval of the Agency.

V.85 CONTRACT-050.44 Performance by the Contractor (March 5, 2007)

The Contractor shall perform all tasks/phases under the Contract, including construction, and install the equipment or system] in such a manner so as not to harm the structural integrity of the buildings or their operating systems. The Contractor shall repair and restore to its original condition any area of damage caused by the Contractor's performance under this Contract. The Agency reserves the right to review the Work performed by the Contractor and to direct the Contractor to take certain corrective action if, in the opinion of the Agency, the structural integrity of the Premises or its operating system is or will be harmed. All costs associated with such corrective action to damage caused by the Contractor's performance of the work shall be borne by the Contractor.

The Contractor shall remain responsible for the professional and technical accuracy of all services performed, whether by the Contractor or its subcontractors or others on its behalf, throughout the term of this Contract. The Contractor is responsible for general broom cleaning at cost. At least once a week, the Contractor shall remove from the Premises all discarded material and rubbish resulting from the work and assure the Premises are free of such materials and rubbish.

V.86 CONTRACT-050.45 Prevailing Minimum Wages (Oct 2009)

The contract with the awarded vendor is subject to and shall comply with the provisions, duties, obligations, remedies and penalties of the Pennsylvania Prevailing Wage Act, 43 P.S. Sections 165-1 through 165-17 and its regulations 34 Pa. Code Sections 9.101 through 9.112, which are incorporated herein by reference as if fully set forth herein. The contractor shall pay no less than the wage rates including contributions for employee benefits as determined by the Secretary of Labor and Industry (hereinafter referred to in this paragraph as "Secretary") for each craft or classification of all workers needed to perform this contract during the term hereof for the county in which the work is to be performed. In compliance with said Pennsylvania Prevailing Wage Act, the Prevailing Minimum Wage Predetermination, as approved by the Secretary, is attached hereto and made a part hereof.

A. The provisions of this paragraph shall apply to all work performed on the contract by the contractor and to all work performed on the contract by all subcontractors. The contractor shall insert in each of its subcontracts all of these required contract provisions and stipulations contained in this paragraph and such other stipulations as may be required.

B. No worker may be employed on the public work except in accordance with the classifications set forth in the decisions of the Secretary. In the event that additional or different classifications are necessary, the procedure set forth in section 8 of the Act (43 P.S. § 165-8) and section 9.107 of the Act's Regulations (relating to petition for review of rates and hearings) shall be followed.

C. Workers employed or working on the public work shall be paid unconditionally, regardless of whether any contractual relationship exists or the nature of a contractually relationship which may be alleged to exist between a contractor, subcontractor and workers, at least once a week without deduction or rebate, on any account, either directly or indirectly, except authorized deductions, the full amounts due at the time of payment, computed at the rates applicable to the time worked in the appropriate classification. Nothing in the contract, the Prevailing Wage Act or its Regulations prohibits the payment of more than the general prevailing minimum wage rates as determined by the Secretary to any worker or public work.

D. The contractor and each subcontractor shall post for the entire period of construction the wage determination decisions of the Secretary, including the effective date of changes thereof, in a prominent and easily accessible place or places at the site of the work and at the place or places used by them to pay workers their wages. The posted notice of wage rates shall contain the following information:

1. The name of project.
2. The name of public body for which it is being constructed.
3. The crafts and classifications of workers listed in the Secretary's general prevailing minimum wage rate determination for the particular project.
4. The general prevailing minimum wage rates determined for each craft and classification and the effective date of changes.
5. A statement advising workers that if they have been paid less than the general prevailing minimum wage rate for their job classification or that the contractor or subcontractor are not complying with the act or the regulations in any manner whatsoever, the worker may file a protest in writing with the Secretary of Labor and Industry within 3 months of the date of the occurrence, objecting to the payment to a contractor to the extent of the amount due or to become due to them as wages for work performed on the public work project. A worker paid less than the rate specified in the contract shall have a civil right of action for the difference between the wage paid and the wages stipulated in the contract, which right of action must be exercised within 6 months from the occurrence of the event creating the right.

E. The contractor and subcontractors shall keep an accurate record showing the name, craft or classification, number of hours worked per day, and the actual hourly rate of wage paid including employee benefits, to each worker employed by the contractor or subcontractor in connection with the public work. The record shall include deductions from each worker. The record shall be preserved for 2 years from the date of payment and shall be open at reasonable hours to the inspection of the public body awarding the contract and to the Secretary or the Secretary's authorized representatives.

F. Apprentices shall be limited to numbers in accordance with a bona fide apprenticeship program registered with and approved by the Pennsylvania Apprenticeship and Training Council and only apprentices whose training and employment are in full compliance with The Apprenticeship and Training Act (43 P.S. §§ 90.1 – 90.10), approved July 14, 1961 and the regulations issued thereto shall be employed on the public work project. A worker using the tools of a craft who does not qualify as an apprentice within the provisions of this subsection shall be paid the rate predetermined for journeymen in that particular craft or classification.

G. Wages shall be paid without deductions except authorized deductions. Employers not parties to a contract

requiring contributions for employee benefits which the Secretary of Labor & Industry has determined to be included in the general prevailing minimum wage rate shall pay the monetary equivalent thereof directly to the workers.

H. Payment of compensation to workers for work performed on public work on a lump sum basis, or a piece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be deemed a violation of the Act, regardless of the average hourly earnings resulting therefrom.

I. Each contractor and each subcontractor shall file a statement each week and a final statement at the conclusion of the work on the contract with the contracting agency, under oath, and in form satisfactory to the Secretary, certifying that workers have been paid wages in strict conformity with the provisions of the contract. If wages remain unpaid, the contractor or subcontractor shall set forth the amount of wages due and owing to each worker respectively. A copy of the form entitled "Contractor's or Subcontractor's Weekly Payroll Certification for Public Works Projects" is attached hereto.

J. Before final payment is made, a final wage certification must be submitted by all contractors and subcontractors.

V.87 CONTRACT-051.1 Notice (Dec 2006)

Any written notice to any party under this Contract shall be deemed sufficient if delivered personally, or by facsimile, telecopy, electronic or digital transmission (provided such delivery is confirmed), or by a recognized overnight courier service (e.g., DHL, Federal Express, etc.) with confirmed receipt, or by certified or registered United States mail, postage prepaid, return receipt requested, and sent to following:

- a. If to the Contractor: the Contractor's address as recorded in the Commonwealth's Supplier Registration system.
- b. If to the Commonwealth: the address of the Issuing Office as set forth on the Contract.

V.88 CONTRACT-052.1 Right to Know Law (Feb 2010)

a. The Pennsylvania Right-to-Know Law, 65 P.S. §§ 67.101-3104, ("RTKL") applies to this Contract. For the purpose of these provisions, the term "the Commonwealth" shall refer to the contracting Commonwealth agency.

b. If the Commonwealth needs the Contractor's assistance in any matter arising out of the RTKL related to this Contract, it shall notify the Contractor using the legal contact information provided in this Contract. The Contractor, at any time, may designate a different contact for such purpose upon reasonable prior written notice to the Commonwealth.

c. Upon written notification from the Commonwealth that it requires the Contractor's assistance in responding to a request under the RTKL for information related to this Contract that may be in the Contractor's possession, constituting, or alleged to constitute, a public record in accordance with the RTKL ("Requested Information"), the Contractor shall:

1. Provide the Commonwealth, within ten (10) calendar days after receipt of written notification, access to, and copies of, any document or information in the Contractor's possession arising out of this Contract that the Commonwealth reasonably believes is Requested Information and may be a public record under the RTKL; and
2. Provide such other assistance as the Commonwealth may reasonably request, in order to comply with the RTKL with respect to this Contract.

d. If the Contractor considers the Requested Information to include a request for a Trade Secret or Confidential Proprietary Information, as those terms are defined by the RTKL, or other information that the Contractor considers exempt from production under the RTKL, the Contractor must notify the Commonwealth and provide, within seven (7) calendar days of receiving the written notification, a written statement signed by a representative of the Contractor explaining why the requested material is exempt from public disclosure under the RTKL.

e. The Commonwealth will rely upon the written statement from the Contractor in denying a RTKL request for the Requested Information unless the Commonwealth determines that the Requested Information is clearly not protected from disclosure under the RTKL. Should the Commonwealth determine that the Requested Information is clearly

not exempt from disclosure, the Contractor shall provide the Requested Information within five (5) business days of receipt of written notification of the Commonwealth's determination.

f. If the Contractor fails to provide the Requested Information within the time period required by these provisions, the Contractor shall indemnify and hold the Commonwealth harmless for any damages, penalties, costs, detriment or harm that the Commonwealth may incur as a result of the Contractor's failure, including any statutory damages assessed against the Commonwealth.

g. The Commonwealth will reimburse the Contractor for any costs associated with complying with these provisions only to the extent allowed under the fee schedule established by the Office of Open Records or as otherwise provided by the RTKL if the fee schedule is inapplicable.

h. The Contractor may file a legal challenge to any Commonwealth decision to release a record to the public with the Office of Open Records, or in the Pennsylvania Courts, however, the Contractor shall indemnify the Commonwealth for any legal expenses incurred by the Commonwealth as a result of such a challenge and shall hold the Commonwealth harmless for any damages, penalties, costs, detriment or harm that the Commonwealth may incur as a result of the Contractor's failure, including any statutory damages assessed against the Commonwealth, regardless of the outcome of such legal challenge. As between the parties, the Contractor agrees to waive all rights or remedies that may be available to it as a result of the Commonwealth's disclosure of Requested Information pursuant to the RTKL.

i. The Contractor's duties relating to the RTKL are continuing duties that survive the expiration of this Contract and shall continue as long as the Contractor has Requested Information in its possession.

V.89 CONTRACT-053.1 Enhanced Minimum Wage Provisions (July 2016)

1. Enhanced Minimum Wage. Contractor/Lessor agrees to pay no less than \$10.15 per hour to its employees for all the hours worked directly performing the services called for in this Contract/Lease, and for an employee's hours performing ancillary services necessary for the performance of the contracted services or lease when such employee spends at least twenty per cent (20%) of their time performing ancillary services in a given work week.

2. Adjustment. Beginning January 1, 2017, and annually thereafter, Contractor/Lessor shall pay its employees described in Paragraph 1. above an amount that is no less than the amount previously in effect; increased from such amount by the annual percentage increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers (United States city average, all items, not seasonally adjusted), or its successor publication as determined by the United States Bureau of Labor Statistics; and rounded to the nearest multiple of \$0.05. The applicable adjusted amount shall be published in the Pennsylvania Bulletin by March 1 of each year to be effective the following July 1.

3. Exceptions. These Enhanced Minimum Wage Provisions shall not apply to employees:

- a. exempt from the minimum wage under the Minimum Wage Act of 1968;
- b. covered by a collective bargaining agreement;
- c. required to be paid a higher wage under another state or federal law governing the services, including the Prevailing Wage Act and Davis-Bacon Act; or
- d. required to be paid a higher wage under any state or local policy or ordinance.

4. Notice. Contractor/Lessor shall post these Enhanced Minimum Wage Provisions for the entire period of the contract conspicuously in easily-accessible and well-lighted places customarily frequented by employees at or near where the contracted services are performed.

5. Records. Contractor/Lessor must maintain and, upon request and within the time periods requested by the Commonwealth, furnish all employment and wage records necessary to document compliance with these Enhanced Minimum Wage Provisions.

- 6. Sanctions.** Failure to comply with these Enhanced Minimum Wage Provisions may result in the imposition of sanctions, which may include, but shall not be limited to, termination of the contract or lease, nonpayment, debarment or referral to the Office of General Counsel for appropriate civil or criminal referral.
- 7. Subcontractors.** Contractor/Lessor shall include the provisions of these Enhanced Minimum Wage Provisions in every subcontract so that these provisions will be binding upon each subcontractor.