

SECTION 01 1000
SUMMARY OF CONTRACT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.
- B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 PROJECT

Project Description: Cafeteria & 3rd Floor Emergency Egress Improvements

Facility: PS #14

Address: 60 Crescent Place, Yonkers, NY 10701.

Owner: Yonkers Public Schools

Address: One Larkin Center
Yonkers, NY 10701

Architect: Fuller and Dangelo P.C.

1.3 PROJECT

- A. The work includes but not limited to the following :
 - 1. Removals.
 - 2. Modifications to existing masonry.
 - 3. Modifications to existing roofing
 - 4. Concrete repairs
 - 5. Concrete foundations and ramp
 - 6. Masonry.
 - 7. FRP doors and aluminum frames.
 - 8. Metal Stairs.
 - 9. Railings.
 - 10. Miscellaneous metals.
 - 11. Painting.
 - 12. Site modifications.
 - 13. Concrete paving.
 - 14. Radiant heating upgrades and modifications.
 - 15. Electrical Renovations.

1.4 CONTRACT DESCRIPTION

- A. This project is exempt from the New York State Wick's Law separate bid requirements. All work shall be performed as a single prime contract based on a Stipulated Price as described in the bid documents.
- B. Contract Type: A single prime contract based on a Stipulated Price including asbestos abatement as described in School Facilities Management Contract Manual And Specifications.
- C. The work of the Contractor is identified in this Project Manual and on the Drawings.
- D. Local custom and trade-union jurisdictional settlements do not control the scope of Work included in each prime contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, the affected contractor(s) shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and delays.

- E. If it becomes necessary to refer to the contract documents to determine which prime Contract includes a specific element of required work, begin by referring to the prime Contracts, themselves; then, if a determination cannot be made from the prime Contracts, refer, in the following order, to the Supplementary Conditions, if any, this section of the Specifications, followed by the other Division-I sections and finally with the Drawings and other Sections of the Specifications.
- F. If, after referring to the contract documents, it cannot be clearly determined which prime Contractor will perform a specific item of required work, then, that item of work will be brought to the YPS Office of Facilities Management and Fuller and D'Angelo, P.C. attention in writing for determination.
- G. Summary by References: Work of the Contract can be summarized by reference to the School Facilities Management Contract Manual And Specifications, Specification Sections, Drawings, or Addenda to Contract Documents issued subsequent to the initial printing of this Project Manual, and including but not necessarily limited to printed material referenced by any of these. It is recognized that the work of the Contract is unavoidably affected or influenced by governing regulations, natural phenomenon, including weather conditions, and other forces outside the contract documents.

1.5 RELATED REQUIREMENTS

- A. School Facilities Management Contract Manual And Specifications.
- B. Attachment B: Division 01 General Requirements and Technical Specification.

1.6 JURISDICTIONAL DISPUTES

- A. If the Contractor has engaged the services of workers and/or subcontractor who are members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Owner and without recourse to the YPS Office of Facilities Management, any conflict between its agreement with the Owner and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade.
- B. The Contractor shall ensure that its work continues uninterrupted during the labor dispute and will be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes

1.7 SUBCONTRACTORS/SUPPLIERS

- A. All subcontractors shall be submitted to YPS Office of Facilities Management and Fuller and D'Angelo, P.C. for approval.

1.8 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of removal and alterations work is shown on drawings.
- B. Refer to paragraph 1.3 for general scope of project
- C. Maintain all building systems in operation when the Facility is occupied during construction until acceptance of the project.
- D. HVAC: Alter existing system and add new construction, keeping existing in operation.
- E. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing in operation.
- F. Yonkers Public Schools will remove the following items before start of work:
 - 1. All movable equipment, furniture, books etc. from all classrooms and spaces being renovated.

1.9 OWNER OCCUPANCY

- A. Refer to School Facilities Management Contract Manual and Specifications for occupancy and hours building is available during constructions.
- B. Cooperate with YPS Office of Facilities Management to minimize conflict and to facilitate Yonkers Public Schools's operations.

1.10 CONTRACTOR USE OF SITE AND PREMISES

- A. Refer to School Facilities Management Contract Manual and Specifications for additional requirements.
- B. Construction Operations: Limited to areas noted on Drawings.
- C. Arrange use of site and premises to allow:
 - 1. Yonkers Public Schools occupancy.
 - 2. Work by Yonkers Public Schools.
- D. Provide access to and from site as required by law and by YPS Office of Facilities Management:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- E. Existing building spaces may not be used for storage unless approved by the YPS Office of Facilities Management.
- F. Contractors shall comply with Local Noise Ordinance. Work disrupting the community must be performed with the following hours:
- G. Construction deliveries shall not occur during the hours of 7:30 AM and 9:00 AM and 2:00 PM and 3:00 PM, when school buses are arriving or leaving the school grounds and school is in session.
- H. During the entire construction period the Contractor(s) shall have limited use of the premises for construction operations, including use of the site as indicated in School Facilities Management Contract Manual and Specifications and work time included in this section.
 - 1. General: Limitations on site usage as well as specific requirements that impact utilization are indicated on the drawings and/or by other contract documents. In addition to these limitations and requirements, the Construction Contractor shall administer allocation of available space equitably among the separate prime(s) and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. Each Prime Contractor shall schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.
 - 2. The Contractor shall limit their use of the premises to the work indicated, so as to allow for Owner occupancy and use by the public during the period when the Owner occupies the building.
 - 3. The Contractor shall to maintain clear and unobstructed paths of exit discharge from all existing exits.
 - 4. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the YPS Office of Facilities Management at all time. Do not use these areas for parking or storage of materials.
 - 5. Lock automotive type vehicles such as passenger cars and trucks and other types of mechanized and motorized construction equipment, when parked and unattended, to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.
- I. Only materials and equipment, which are to be used directly in the work, shall be brought to and stored on the project site by the Contractor. After equipment is no longer required for the work, it shall be promptly removed from the project site. Protection of construction materials and equipment stored at the project site from weather, theft, damage and all other adversity is solely the responsibility of the Contractors.
- J. Site work shall be scheduled and coordinated with School Facilities Management Contract Manual and Specifications and the YPS Office of Facilities Management whose decisions shall be final and binding on all contractors.
 - 1. Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction

- K. Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas designated by YPS Office of Facilities Management. If additional storage is necessary obtain and pay for such storage off-site.
- L. The Contractor(s) and any entity for which the Contractor is responsible shall not erect any sign on the Project site without the prior written consent of the YPS Office of Facilities Management which may be withheld in the sole discretion of the Owner.
- M. Contractor(s) shall ensure that the work, at all times, is performed in a manner that affords reasonable access, both vehicular and pedestrian, to the site of the work and all adjacent areas. The work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the work shall be free from all debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract Documents, each contractor shall use its best efforts to minimize any interference with the occupancy or beneficial use of:
 - 1. Any areas and buildings adjacent to the site of the work or;
 - 2. The Building in the event of partial occupancy as more.
- N. Without prior approval of the YPS Office of Facilities Management, each Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitations, lavatories, toilets, entrances and parking areas other than those designated by the YPS Office of Facilities Management. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with the rules and regulations promulgated by the YPS Office of Facilities Management in connection with the use and occupancy of the Project Site, and the Building, as amended from time to time. The Contractor shall immediately notify the YPS Office of Facilities Management in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The YPS Office of Facilities Management may, in the YPS Office of Facilities Management's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements, applicable to use, and occupancy of the Project Site and the Building.
- O. Maintain the existing building in a safe and weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period. When work is scheduled after hours clean and remove all temporary barriers and protection so that the building can be occupied the following day when normal building occupancy will occur.
- P. Keep public areas such as hallways, stairs, elevator lobbies, and toilet rooms free from accumulation of waste material, rubbish or construction debris.
- Q. Smoking, drinking of alcoholic beverages or open fires will not be permitted on the project site.
- R. Utility Outages and Shutdown:
 - 1. Limit disruptions, shut downs, switch overs, etc. of utility services to hours the building is unoccupied, Saturdays, Sunday and/or holidays.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire alarm system, electrical, data, and heating system, without 7 days notice to YPS Office of Facilities Management and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.

1.11 AVAILABILITY OF EXISTING BUILDING

- A. Refer to School Facilities Management Contract Manual and Specifications for additional requirements.
- B. Upon request by the Contractor, the building may be made available, at the discretion of the YPS Office of Facilities Management and at the Cost to the Contractor, during such times as are allowed by local

noise ordinance, in addition to the above listed hours. A request for use during these off-regular hours must be made at least two (2) days before the use. Such off-hours may include Saturdays, and Holidays.

1. If the Contractor requests the use of the facility for off-hours to maintain the scheduled completion date, the Contractor shall pay all additional costs in connection with opening, providing security and project management expenses incurred with no costs to the Owner. All expenses shall be deducted from the Contractor's contract price. Comply with other portions of this Section.
2. Weekend, Holiday and Night Work:
 - a. The contractor shall make no claim for delay for the inability of the YPS Office of Facilities Management to make the site available for off-hours work. Should the YPS Office of Facilities Management make the site available during these hours at the contractor's request, the cost will be borne by the Contractor.

- C. ALL CONTRACTORS SHALL BE REQUIRED TO PERFORM SCHEDULED WORK WITHIN THE EXISTING BUILDING ONLY DURING THE TIME PERIODS INDICATED AND SHALL INCLUDE IN THE BID ALL COSTS FOR LABOR, MATERIAL, ETC. INCLUDING PREMIUM TIME TO PERFORM THE WORK, PER PHASE PER TIME PERIOD.

1.12 COMPLETION OF WORK AFTER SCHEDULED COMPLETION DATE

- A. Refer to School Facilities Management Contract Manual and Specifications for additional requirements.
- B. Contractor(s) shall perform work only within these limitations and all manpower, equipment, etc., shall be provided as required to complete the work as per schedule. In the event the contractor does not complete the work as scheduled all work to be performed shall be performed after 4:30 PM when the building is unoccupied and approved by the YPS Office of Facilities Management. All costs shall be borne by the Contractor.
- C. The Contractor shall provide necessary manpower, equipment, etc., as required to maintain schedule developed within the time limitations as described above.

1.13 COVID-19

- A. Refer to Notice to Bidders for additional information.
- B. Due to the ongoing COVID-19 pandemic and the resulting uncertainty with regard to (a) when the Owner's schools will be in session during 2021, (b) what restrictions, if any, will be applicable to construction activities on the Owner's property due to State, Federal or Local orders, laws, regulations or rules related to the COVID-19 pandemic (including but not limited to social distancing, cleaning and disinfection requirements) and (c) the duration of any restrictions imposed on construction activities, the Owner may modify the construction schedule set forth in the Contract Documents and the Contractor acknowledges and agrees that there shall be no additional compensation paid by the Owner for schedule modifications caused directly or indirectly by the COVID-19 pandemic. The Contractor further acknowledges and agrees that the sole remedy for any schedule modifications caused directly or indirectly by the COVID-19 pandemic shall be an extension of time, if warranted.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 2000
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Procedures for preparation and submittal of application for payments.

1.3 RELATED REQUIREMENTS

- A. Section 01 7800 - Closeout Submittals for additional requirements for Final Payment.

1.4 SCHEDULE OF VALUES

- A. Form to be used: AIA G702/703 .
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values in PDF Format within 10 days after date Letter of Award.
- E. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify Bonds and Sub-contractors.
- F. Revise schedule to list approved Change Orders, with each Application For Payment.
- G. Sub-schedules: Where the Work is separated into phases or buildings provide separate payment applications, or provide sub-schedules showing values correlated with each building.
 - 1. For public school projects identify each application with the SED Project number for each building and Fuller and D'Angelo's project number.
- H. Provide a separate line item for the following: (where applicable)
 - 1. Bonds. (Bond premium may be paid when invoice of premium is provide).
 - 2. OCP. (Policy premium may be paid when invoice of premium is provide).
 - 3. Labor and materials, when payment is anticipated for material not installed.
 - 4. Submittals. (1% Minimum of contract amount).
 - 5. Each allowance.
 - 6. Meeting attendance.
 - 7. As-built Drawings.
 - 8. Punch list.
 - 9. Final Cleaning.
 - 10. Closeout Documents (5% Minimum of contract amount)
 - 11. Authorized change orders.

1.5 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement but not more than one per month.
- B. Form to be used: Approved Schedule of Values form.
- C. Forms filled out by hand will not be accepted.
- D. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.

Yonkers Public Schools
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Emergency Egress Improvements
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PRICE AND PAYMENT PROCEDURES

3. Scheduled Value.
 4. Previous Applications.
 5. Work in Place and Stored Materials under this Application.
 6. Authorized Change Orders.
 7. Total Completed and Stored to Date of Application.
 8. Percentage of Completion.
 9. Balance to Finish.
 10. Retainage.
- E. Execute certification by signature of authorized officer.
- F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- H. Submit one (1) electronic "pencil copy", in PDF format, of each Application for Payment to Fuller and D'Angelo, P.C. and Construction Manager and district representative for approval.
- I. After Architect's approval of the "pencil copy" submit three hard copies of approved Application for Payment to Construction Manager
- J. Include the following with each application:
1. Transmittal letter as specified for Submittals in Section 01 3000.
 2. Construction progress schedule, revised and current as specified in Section 01 3216.
 3. Partial Waivers of Mechanic's Lien: With each Application for Payment, submit partial waivers of mechanic's liens from contractor, subcontractors, and suppliers for construction period covered by the previous application.
 - a. Waiver Forms: Submit waivers of lien on forms, provided by the Architect in Section 01 2005.
 4. When an application shows completion of an item, submit final or full waivers.
 5. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 6. Submit Final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 7. Certified Payrolls: All Applications for Payment must be accompanied with certified payrolls for all Contract Work performed. **Each contractor and sub-contractor shall submit to the Owner within thirty days after issuance of its first payroll, and every thirty days thereafter,** a transcript of the original payroll record subscribed and affirmed as true under penalties of perjury. The Owners shall be required to receive and maintain such payroll records. The original payrolls or transcripts shall be preserved for three years from the completion of the work on the awarded project.
 - a. Submit certification that all personnel listed on certified payrolls have successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.
- K. Liens: No Payment will be made when a lien is filed against Owner by contractor or any subcontractor, or supplier or other entities until such lien is removed, bonded or similar action acceptable to the Owner
- L. Project record documents as specified in Section 01 7800, shall be available for review by Yonkers Public Schools as a prerequisite for approval of payment.
- M. Payment for stored materials (whether on-site but not installed, or stored in secured warehouse) will require a bill of lading showing the exact value. In no case will more than 90% be approved if the item is

not installed. Insurance certificates will be provided specific to materials stored (for on-site or offsite items)

- N. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- O. The Owner shall retain Five (5) percent of the amount of each payment.

1.6 INITIAL APPLICATION FOR PAYMENT:

- A. Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. Executed contract.
 - 2. Approved bonds.
 - 3. Approved insurance certificates.
 - 4. Names of full time project manager, on site superintendent, and foreman.
 - 5. List of suppliers and fabricators: Refer to Section 01 1000 Summary of Contract(s) .
 - 6. List of subcontractors: .
 - 7. Approved Schedule of Values.
 - 8. Contractor's Construction Schedule (preliminary if not final).
 - 9. Contractor's Submittal Schedule.

1.7 APPLICATION FOR PAYMENT AT SUBSTANTIAL COMPLETION

- A. Comply with Requirements of Section 01 7800

1.8 MODIFICATION PROCEDURES

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ, subcontractors whose work is affected by any modifications or changes to the Contract Documents
- B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Fuller and D'Angelo, P.C., Owner's Representative, and Construction Manager will issue instructions directly to the contractor.
- C. For other required changes, Architect will issue a document signed by Yonkers Public Schools instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
- D. Fuller and D'Angelo, P.C. may issue a document which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change . The Contractor shall prepare and submit a fixed price quotation within ten (10) days.
- E. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.
- F. Computation of Change in Contract Amount:
 - 1. Refer to Article 21 and 22 of Contract Manual.
- G. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.

1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractors 's price quotation.
 2. For change requested by the contractor, the amount will be based on the Contractor 's request for a Change Order as approved by Architect.
 3. For pre-determined unit prices, unit costs, allowance and quantities, the amount will based on the fixed unit prices, unit costs, allowance.
 4. For change ordered by Architect without a quotation from , the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- H. Substantiation of Costs: Provide full information required for evaluation.
1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
 - a. If the contractor is directed to perform work on a "Time and Material" basis he will notify the Owner's Representative and Architect prior to starting and will present an itemized T&M sheet daily for Owner's Representative and Architect signature at the end of the shift. No payments will be made for any T&M work without daily signed worksheets.
- I. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- J. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- K. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- L. Promptly enter changes in Project Record Documents.
- 1.9 APPLICATIONS FOR PAYMENT WHEN BEHIND SCHEDULE**
- A. When the project falls behind schedule the contractor shall demonstrate the actions to be taken to put the project back on schedule.
1. Payments will not be approved until satisfactory evidence is presented to put the project on schedule.
- 1.10 APPLICATION FOR PAYMENT AFTER SCHEDULED COMPLETION DATE**
- A. In the event the work is not completed by the schedule date, listed in Section 01 1000 - Summary, and in addition to the other remedies described, the Architect will not review progress payment requisitions submitted after the construction completion date, and the District will not issue any progress payments after that date, until all work is completed.

1. Only one requisition for work performed, after the construction completion date, may be submitted, and it may be submitted only when all work is complete and a Punch List inspection is conducted; said requisition may be submitted when the work at 100% complete, less 5% retainage.

1.11 APPLICATION FOR FINAL PAYMENT

- A. Comply with Section 01 7800 - Closeout Submittals.
- B. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- C. Application for Final Payment will not be considered until the following have been accomplished:
 1. All closeout procedures specified in Section 01 7800 - Closeout Submittals are submitted and approved.
 2. All "punch list" items have been completed.
- D. It is understood by the Contractor that the maximum payment due the contractor prior to final payment shall be Ninety (95%) of the Contract amount and the final Five (5%) will be due only after the above is satisfied.

END OF SECTION

**SECTION 01 2005
PARTIAL RELEASE OF LIEN**

CONTRACTOR/SUBCONTRACTOR/VENDOR'S LETTERHEAD

Name of Facility: PS #14

Address: 60 Crescent Place, Yonkers, NY 10701

Name of Owner: Yonkers Public Schools

Name of the Contractor/Subcontractor/Vendor: _____

Address: _____

Trade/Vendor: _____

Application # _____ Dated _____.

We certify that we have completed _____% of our Contract.

Prior to this requisition we have received payment equal to _____% of our contract amount.

The undersigned, upon receipt of the above requisition payment hereby releases and discharges the Owner of and from any liability or obligation in any way related to or arising out of this project up to and including the date of this document.

The undersigned further covenants and agrees that it shall not in any way claim or file a mechanic's or other lien against the premises of the above designated project, or any part thereof, or against any fund applicable thereto for any of the work, labor, materials heretofore furnished by it in connection with the improvement of said premises.

The undersigned further warrants that, in order to induce the Owner to release this partial payment, they have paid all claims for labor, material, insurance, taxes, equipment, etc., employed in the prosecution of the work above, to date of this requisition.

The undersigned hereby releases and agrees to hold the Owner harmless from any and all claims in connection with the furnishing of such labor and materials, etc., for the construction of the aforementioned project.

The undersigned further guarantees that all portions of the work furnished and/or provided by them are in accordance with the contract and that the terms of the contract with respect to these guarantees will hold for the period specified in said contract.

IN WITNESS WHEREOF, we have executed under seal this release on the above date and to be legally bound hereby:

WITNESS: _____ FIRM: _____

BY: _____

State of New York, County of _____ subscribed and sworn to before me this ____ day of _____ 202____

Notary public

My commission expires _____

END OF SECTION

SECTION 01 3000
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Progress meetings.
- D. Proof of Orders & Delivery Dates.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Submittal procedures.

1.3 RELATED REQUIREMENTS

- A. Section 01 3216 - Construction Progress Schedule: Form, content, and administration of schedules.
- B. Section 01 3553 - Security Procedures .
- C. Section 01 7000 - Execution: Additional coordination requirements.
- D. Section 01 7800 - Closeout Submittals:

1.4 GENERAL ADMINISTRATIVE REQUIREMENTS

- A. Comply with requirements of Section 01 7000 - Execution for coordination of execution of administrative tasks with timing of construction activities.

1.5 PROJECT COORDINATION

- A. Project Coordinator: Owner Representative .
- B. Coordination: The contractor shall coordinate its construction operations with those of other subcontractors and entities to ensure efficient and orderly installation of each part of the Work. The contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation
- C. Coordinate installation of different components with other contractors and/or subcontractor to ensure maximum accessibility for required maintenance, service, and repair
- D. Cooperate with the Project Coordinator in allocation of mobilization areas of site, access, traffic, parking facilities, field offices, and sheds.
- E. Comply with Architect's and Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- F. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
- G. Make the following types of submittals to Architect
 - 1. Requests for interpretation.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.

5. Design data.
6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.
9. Correction Punch List and Final Correction Punch List for Substantial Completion.
10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

- A. Architect will schedule a meeting after Notice of Award.
- B. Attendance Required:
 1. Yonkers Public Schools.
 2. Architect.
 3. Consultants.
 4. Contractor and field superintendent.
- C. Agenda:
 1. Execution of Yonkers Public Schools-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties to Contract Yonkers Public Schools, and Architect.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 7. Scheduling.
 8. Scheduling activities of Roofing Manufacturer's field inspections.
 9. Use of premises by Contractor.
 10. Yonkers Public Schools's requirements and occupancy prior to completion.
 11. Construction facilities and controls provided by Yonkers Public Schools.
 12. Temporary utilities provided by Yonkers Public Schools.
 13. Survey existing facilities prior to starting construction.
 14. Security and housekeeping procedures.
 15. Requirements for start-up of equipment.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Yonkers Public Schools, participants, and those affected by decisions made.
- E. Architect will record minutes and distribute copies within five days after meeting to all participants. Contactor shall distribute to all entities of the Contractor affected by decisions made.

3.2 PROGRESS MEETINGS

- A. Architect will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
 1. Meetings will be scheduled throughout progress of the Work at minimum at two week intervals.
- B. Attendance Required:
 1. Contractor.
 2. Yonkers Public Schools.
 3. Architect.

4. Consultants.
 5. Contractor Superintendent.
 6. Major Subcontractor and suppliers as appropriate to agenda topics for each meeting.
- C. Agenda:
1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede, or will impede, planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of delivery schedules.
 7. Review construction safety programs.
 8. Review exiting and separation of construction
 9. Maintenance of progress schedule.
 10. Corrective measures to regain projected schedules.
 11. Planned progress during succeeding work period.
 12. Coordination of projected progress.
 13. Maintenance of quality and work standards.
 14. Effect of proposed changes on progress schedule and coordination.
 15. Other business relating to Work.
- D. Architect will record minutes and distribute copies within five after meeting to all participants. Contractor shall distribute to all entities of the Contractor affected by decisions made.

3.3 WEEKLY COORDINATION MEETINGS

- A. The Contractor shall schedule and hold weekly general project coordination meetings with the Owner's Representative, to review the work schedule for the week in order to insure the planned work does not conflict with facility operations.

3.4 CONSTRUCTION PROGRESS SCHEDULE - See Section 01 3216

3.5 PROOF OF ORDERS AND DELIVERY DATES

- A. Within two (2) weeks after the approval of shop drawings, samples, product data and the like, the Contractor(s) shall provide copies of purchase orders for all equipment and materials which are not readily available in local stock. The Contractor(s) shall submit written statements from suppliers confirming the orders and stating promised delivery dates. Dates shall be indicated and coordinated with the Construction Schedule.

3.6 SUBMITTALS FOR REVIEW

- A. All submittals are the product and the property of the Contractor. The Owner, Owner's Representative, Architect, or Consultants shall not be responsible for the contractor's construction means, methods or techniques: safety precautions or programs; Acts or admissions; or failure to carry out the work in accordance to the contract documents
- B. Shop Drawing Submittal Log no later than ten (10) days after award of contract.
- C. Shop Drawing Submittals shall be submitted no later than twenty (20) days after Letter of Award of Contract. No further payments will be made to the contractor after twenty (20) until all major submittals are made.
- D. When the following are specified in individual sections, including but not limited to the following, submit them for review:
1. Product data.
 2. Shop drawings.

3. Samples for selection.
4. Templates.
- E. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 1. Submittals for roofing or others requiring consultant review submit directly to consultant with copy to Architect
- F. Samples will be reviewed only for aesthetic, color, or finish selection and for record documents purposes described in Section 01 7800 - Closeout Procedures.
- G. After review, provide copies and distribute in accordance with Submittal Procedures article below .
- H. The Architect shall review and approve or take other appropriate action on the Contractor submittals, such as shop drawings, product data, samples and other data, which the Contractor is required to submit, but only for the limited purpose of checking for conformance with the design concept and the information shown in the Construction Documents. This review shall not include review of the accuracy or completeness of details, such as quantities, dimensions, weights or gauges, fabrication processes, construction means or methods, coordination of the work with other trades or construction safety precautions, all of which are the sole responsibility of the Contractor. The Architect's review shall be conducted with reasonable promptness while allowing sufficient time in the Architect's judgment to permit adequate review. Review of a specific item shall not indicate that the Architect has reviewed the entire assembly of which the item is a component. **The Architect shall not be responsible for any deviations from the Construction Documents not brought to the attention of the Architect, in writing, by the Contractor.** The Architect shall not be required to review partial submissions or those for which submissions of correlated items have not been received.
- I. Marking or comments on shop drawings shall not be construed as relieving the Contractor from compliance with the contract project plans and specifications, nor departure therefrom. The contractor remains responsible for details and accuracy for conforming and correlating all quantities, verifying all dimensions, for selecting fabrication processes, for techniques of assembly and for performing their work satisfactorily and in a safe manner.
- J. **Architect will review the original submittal and one (1) re submittal. Additional reviews will be additional services provided to the Owner and charged accordingly. The Owner will back charge the contractor accordingly.**
- K. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- L. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

3.7 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 1. Design data.
 2. Certificates.
 3. Inspection reports.
 4. Manufacturer's instructions.
 5. Manufacturer's field reports.
 6. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator for Yonkers Public Schools. No action will be taken.

3.8 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Refer to Section 01 7800 - Closeout Submittals.

3.9 NUMBER OF COPIES OF SUBMITTALS

- A. Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected. All submittals shall be in electronic format and conforming to the following:
1. Each item shall be in a separate file.
 2. Each file name shall start with the specification section number and contain an abbreviated explanation of what it contains; for example:
 - a. 03 3000 Concrete; 07 5323 EPDM.pdf; 07 5323 Bond Adh.pdf ; 07 7100 Drain.pdf; 07 7100 Hatch.pdf; 09900 Painting;
 3. Add Revision number (Rev2 Rev3, etc) to the file name when resubmitting items, for example:
 - a. 07 5323 EPDM Rev1.pdf 07 5323 Bond AdhRev1.pdf
 4. Use capital letters and spaces to make the names "readable" do not use special characters, underscores, hyphens, etc.
 5. Keep the file names short, no more than 25 characters.
 6. Provide a transmittal with each electronic submittal and list each item that's included.
 7. Provide a Cover Sheet with each item - in the same file as the technical submittal.
 8. Do not add dates to the file names, the files are automatically dated when created..
 9. Do not zip the files, and do not put the files in Folders.
 10. Do not email electronic submittal attachments larger than 5 MB.
 11. Do not email multiple electronic submittals- rather bum the submittals on a CD and send the CD via FedEx or other overnight mail.
 12. Make all technical submittals at one time per trade- refer to the specification for additional submittal requirements for example:
 - a. Concrete; Masonry; Miscellaneous Fabrications; Roofing; etc.
 13. Do not send MSDS with the technical submittals; collate all of the MSDS needed for the entire project in three ring binders, organized by specification section, and submit the binders to the Owner, with copy of Transmittal to the Architect, and maintain one copy at the project site.
- B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
1. After review, produce duplicates.
 2. Approved sample will be retained at the project site.
 3. Retained samples will not be returned to Contractor unless specifically so stated.
 4. Submit with each sample, in electronic PDF, data, cuts, photos, color, charts, etc.

3.10 SUBMITTAL PROCEDURES

- A. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
 2. Do not reproduce the Contract Documents to create shop drawings.
 3. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- B. Transmit each submittal with a copy of approved submittal form attached to this section .
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

1. Contractor's submittal of shop drawings certifies that the contractor has reviewed and coordinated this shop drawing and they are in conformance to the plans, specifications, applicable codes and other provisions of the Contract Documents.
- E. All submitted shop drawings shall be stamped and signed by the Contractor with the following note:
 1. "We the undersigned certify that we have reviewed and coordinated this shop drawing and they are in conformance to the plans, specifications, applicable codes and other provisions of the Contract Documents."
- F. Deliver submittals to Fuller and D'Angelo e-mail address and/or Consultants when directed.
- G. Schedule submittals to expedite the Project, and coordinate submission of related items.
- H. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.
- I. Resubmittals: Contractor shall resubmit within 5 working days after receiving submittal.
- J. Allow 5 working days for processing each re submittal.
- K. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- L. Provide space for Architect and Consultants review stamps.
- M. When revised for resubmission, identify all changes made since previous submission.
- N. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- O. Submittals not requested will not be recognized or processed.

3.11 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. General: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Architect/Engineer will review each submittal, mark with appropriate "Action".
- C. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
- D. Final Unrestricted Release: Where the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.
 1. Marking: "No Exceptions Taken"
- E. Final-But-Restricted Release: When the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with both the Architect's/Engineer's notations or corrections on the submittal and with the requirements of the contract documents; acceptance of the work will depend on that compliance.
 1. Markings: "Make Correction Noted"
- F. Returned for Re-submittal: When the submittal is marked as follows, do not proceed with the work covered by the submittal, including purchasing fabrication, delivery or other activity. Revise the submittal or prepare a new submittal in accordance with the Architect's/Engineer's notations stating the reasons for returning the submittal; resubmit the submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the following marking to be used at the project site, or elsewhere where work is in progress.
 1. Marking: "Revise and Resubmit"
- G. Marking: "Rejected".

Yonkers Public Schools
Cafeteria and 3rd Floor
Emergency Egress Improvements
PS 14/Rosemarie Ann Siragusa School - YPS # 108820
ADMINISTRATIVE REQUIREMENTS

- H. Other Action: Where the submittal is returned, marked with the Architect/Engineer's explanation, for special processing or other Contractor activity, or is primarily for information or record purposes, the submittal will not be marked.

SUBMITTAL COVERSHEET

Yonkers Public Schools
Cafeteria & 3rd Floor Emergency Egress Improvements
PS #14

ARCHITECT:

Architect

45 Knollwood Rd.

Elmsford, NY10523

OWNER:

Yonkers Public Schools

One Larkin Center

Yonkers, NY 10701

CONTRACTOR: _____ **CONTRACT:** _____

ADDRESS: _____

TELEPHONE: _____ **FAX:** _____ **EMAIL:** _____

Facility Name: PS #14

Type of Submittal: Re-submittal: No Yes

Shop Drawings Product Data Schedule Sample

Test Report Certificate Color Sample Warranty

SUBMITTAL DESCRIPTION: _____

PRODUCT NAME: _____

MANUFACTURER: _____

SUBCONTRACTOR/ _____

SUPPLIER: _____

SPEC. SECTION NO.: _____ **DRAWING NO(S):** _____

PARAGRAPH: _____ **RM. OR DETAIL NO(S):** _____

CONTRACTOR'S REVIEW STAMP

Contractor Review Statement: These documents have been checked for accuracy and coordinated with job conditions and Contract requirements by this office and have been found to comply with the provisions of the Contract documents.

Remarks:

NAME: _____ **DATE:** _____

END OF SECTION

SECTION 01 3216
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Preliminary schedule.
- B. Construction progress schedule, bar chart type.

1.3 RELATED SECTIONS

- A. Section 01 1000 - Summary of Contract: Work sequence.
- B. Section 01 3000 - Administrative Requirements

1.4 REFERENCES

- A. AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.

1.5 RESPONSIBILITY

- A. The Contractor shall be responsible for preparing and updating the contract progress schedule. General Construction Contractor shall coordinate their work with work of the other prime contracts.
- B. The Contractor shall develop a full schedule, in sufficient detail and clarity of form and technique so that the contractor can plan and control his work properly and the Owner's Representative and Architect can readily monitor and follow the progress for all portions of the work. The Contractor shall complete the detailed schedule within 10 days after contract award
 - 1. Identify all long lead items and dates required on site.
 - 2. In the event of conflict Owner's Representative and Architect shall resolve a provide direction which is in the best interest on the District.
- C. The activities identified in the schedule shall be analyzed in detail to determine activity time durations in units of whole working days. All duration's shall be the result of definitive manpower and resource planning by the Contractor.
- D. The activity data shall include activity codes to facilitate selection, sorting and preparation of summary reports and graphics. Activity codes shall be developed for:
 - 1. Area: Subdivision of the building(s) and site(s) into logical modules or blocks and levels. Pods A, B, C and D.
 - 2. Responsibility: Contractor or subcontractor responsible for the work.
 - 3. Specifications: 16 Division CSI format.
 - 4. System: Division of the work into building systems for summary purposes.
 - 5. Milestone: Work associated with completion of interim completion dates or milestones
 - 6. Pay Item: Work identified with a pay item on the Schedule of Values.

1.6 SUBMITTALS

- A. Within ten (10) days after date of Agreement, submit preliminary schedule .
- B. If preliminary schedule requires revision after review, submit revised schedule within 5 days.
- C. Within 5 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

- F. Submit under transmittal letter form specified in Section 01 3000 - Administrative Requirements.
- G. The contractor(s) are hereby notified that payment requisitions will not be processed by the Architect and Owner's Representative nor paid by the Owner until all schedules are reviewed and approved by each prime contractor and the Architect or Owner's Representative.

1.7 QUALITY ASSURANCE

- A. Scheduler: Contractor 's personnel or specialist Consultant specializing in construction scheduling with one years minimum experience in scheduling construction work of a complexity comparable to this Project, and having use of computer facilities capable of delivering a detailed graphic printout within 48 hours of request.
- B. Contractor's Administrative Personnel: 3 years minimum experience in using and monitoring Bar Chart schedules on comparable projects.

1.8 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each building and each activity. Identify each activity with the applicable specification section number.
- B. Submit schedule in electronic PDF format.
- C. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.
- B. Based on the preliminary development of the progress schedule and on feedback from Owner, Architect, Construction Manager, and Owner's Representative or whatever updating may have occurred during the project start-up, the Contractor shall, for the entire work of the contract, prepare the (Master Schedule), secure critical time commitments for performing major elements of all the work.

3.2 GENERAL CONTENT.

- A. The contractor shall prepare a schedule for their work.
- B. Milestones: Include milestones in schedule, including, but not limited to, Notice of Award, Submittals, Verification of existing conditions, Removals, Delivery of Major Equipment, such as HVAC Units, Fans, Motors, Installation, Substantial Completion, Completion of Punch List, Final Completion, and Closeout and long lead items such as storefront, doors and windows.
- C. Show complete sequence of construction by activity, by room with dates for beginning and completion of each element of construction.
- D. Identify each item by specification section number.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide legend for symbols and abbreviations used.

3.3 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.4 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Owner's Representative at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.

- C. After review, revise as necessary as result of review, and resubmit within 5 days.
 - 1. When project work is behind schedule indicate revisions required to put the project on schedule.
 - 2. Payments will not approved until satisfactory evidence is presented to put the project on schedule.

3.5 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Update diagrams to graphically depict current status of Work.
- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.6 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's site files, subcontractors, major suppliers, Fuller and D'Angelo, P.C., and Owner's Representative and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION

SECTION 01 3307
SED SPECIAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section specifies special requirements of State Education Department, including Commissioner's Regulation Part 155.5, 155.7
 - 1. Copies of Commissioner's Regulation Part 155.5, 155.7 are available on the State Education Department's web site. www.p12nysed.gov

1.3 CERTIFICATE OF OCCUPANCY

- A. **The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a Certificate of Occupancy.**

1.4 GENERAL SAFETY AND SECURITY DURING CONSTRUCTION

- A. All construction materials shall be stored in a safe and secure manner.
- B. Fences around construction supplies or debris shall be maintained.
- C. Gates shall always be locked unless a worker is in attendance, to prevent unauthorized entry.
- D. During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.
- E. Workers shall be required to wear photo-identification badges at all times for identification and security purposes while working at occupied sites.

1.5 SEPARATION OF CONSTRUCTION

- A. Separation of construction areas from occupied spaces. Construction areas that are under the control of a contractor and therefore not occupied by district staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Metal stud and gypsum board (Type X) must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.
 - 1. A specific stairwell and/or elevator may be assigned for construction worker use during work hours, when approved by the Owner. Workers may not use corridors, stairs or elevators designated for students or school staff.
 - 2. Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.
 - 3. All occupied parts of the building affected by renovation activity shall be cleaned at the close of each work day. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.
 - 4. A plan detailing how exiting required by the applicable building code will be maintained.
 - 5. A plan detailing how adequate ventilation will be maintained during construction.

1.6 FIRE PREVENTION

- A. There is no smoking on school property for fire prevention and New York State Law.
- B. Any holes in floors or walls shall be sealed with a fire resistant material.

- C. Contractor shall maintain existing fire extinguishers.
- D. Fire alarm and smoke detection systems shall remain in operation at all times.

1.7 CONSTRUCTION DIRECTIVES

- A. Construction Noise. Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken.
- B. Construction Fume Control: The Contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, etc. to ensure they do not enter occupied portions of the building or air intakes.
- C. Off-Gassing Control. The Contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc., are scheduled, cured or ventilated in accordance with manufacturer's recommendations before a space can be occupied.

1.8 ASBESTOS

- A. Asbestos/Lead Test Asbestos Letter. Indication that all school areas to be disturbed during renovation or demolition have been or will be tested for lead and asbestos.
- B. Asbestos Code Rule 56. Large and small asbestos abatement projects as defined by 8 NYCRR 155.5(k) shall not be performed while the building is occupied. Note: It is SED's interpretation that the term "building" as referenced in this section, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non combustible construction. The isolated portions (the occupied portion and the portion under construction) of the building must contain separate code compliant exits. The ventilation systems must be physically separated and sealed at the isolation barrier(s).
 - 1. Asbestos TEM. The asbestos abatement area shall be completely sealed off from the rest of the building and completely cleaned and tested by TEM prior to re-entry by the public.
 - 2. Lead Abatement Projects. A project that contains materials identified to be disturbed which tests positive for lead shall include that information in the Construction Documents. The Construction Documents must address the availability of lead testing data for the building and include a statement that the OSHA regulations be followed and that cleanup and testing be done by HUD protocol.

1.9 VENTILATION

- A. The work, as scheduled in the existing building, is to be performed when the facility is unoccupied. In the event that work is required to be performed during times when the building is occupied, all existing ventilation system between areas of work and areas of occupancy shall be disconnected, separated and code complying ventilation requirements be provided the occupied area. Prior to such work commencing the contractor shall submit a plan, for review indicating procedure to be taken. Also see paragraph 1.5 above for additional requirements."

1.10 ELECTRICAL CERTIFICATION:

- A. The electrical subcontractor shall obtain UL Certification or Inspection from a Certified Electrical Organization for electrical installation.

1.11 EXITING

- A. Exiting: Work will be performed when school is not in session or after school hours. All exiting will be clear and usable at all times.
- B. All exits shall be clear and usable at all times.
- C. All modifications or changes to the exiting plan shall be approved by the Architect.

1.12 CONSTRUCTION WORKERS IN OCCUPIED AREAS

- A. No worker shall be permitted in areas occupied by students. If access is required by the contractor's personnel they will be supervised by District personnel. Contractor shall provided 24 hour notice to the Owner when such access will be required.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 3553
SITE SAFETY AND SECURITY PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. The safety requirements, which must be followed by the Contractor during the execution of this contract.
- B. The Contractor agrees that the work will be completed with the greatest degree of safety and:
 - 1. To conform to the requirements of the Occupational Safety and Health Act (OSHA) and the Construction Safety Act including all standards and regulations that have been or shall be promulgated by the governmental authorities which administer such acts, and shall hold the Owner, Owner's Representative, the Architect, and all their employees, consultants and representatives harmless from and against and shall indemnify each and everyone of them for any and all claims, actions, liabilities, costs and expenses, including attorneys fees, which any of them may incur as a result of non-compliance.
- C. Security measures including entry control, personnel identification, and miscellaneous restrictions.

1.3 REFERENCES:

- A. Code of Federal Regulations OSHA Safety and Health.

1.4 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary of Contract: use of premises and occupancy .
- B. Section 01 5000 - Temporary Facilities and Controls01 5000: _____.

1.5 DEFINITIONS

- A. Public shall mean anyone not involved with or employed by the contractor to perform the duties of this contract.
- B. Site shall mean the limits of the work area.
- C. Contractor shall mean the contractor, his/her subcontractors and any other person related to the contract execution.

1.6 SECURITY PROGRAM

- A. Security and Protection Facilities and Services shall be the responsibility of the the Contractor and all costs shall be included in their bid.
- B. Protect Work, existing premises and Yonkers Public Schools's operations from theft, vandalism, and unauthorized entry.
- C. Coordinate with Yonkers Public Schools's security program.
- D. Initiate program in coordination with Yonkers Public Schools's existing security system at project mobilization.
- E. Maintain program throughout construction period until directed by Architect

1.7 ENTRY CONTROL

- A. The existing building contains a security alarm system maintained and operated by the Owner. Access into the existing building shall not be permitted unless the owner is notified and arrangements made to deactivate the system
- B. Restrict entrance of persons and vehicles into Project site and existing facilities.
- C. Allow entrance only to authorized persons with proper identification.

- D. Yonkers Public Schools will control entrance of persons and vehicles related to Yonkers Public Schools's operations.
- E. Coordinate access of Yonkers Public Schools's personnel to site in coordination with Owner Representative and Yonkers Public Schools and security forces.
- F. Traffic Control
 - 1. Contractor shall maintain access for emergency vehicles, fireman and pedestrians and protect from damage all persons and property within the limits of and for the duration of the contract;
 - 2. Conduct construction operations so that the traveling public and pedestrian safety is subjected to a minimum of hazard and delay.
 - 3. Contractor shall perform the following minimum requirements as directed by Owner's Representative or Owner.
 - a. Keep the surface of the traveled way free from mounds, depressions, and obstructions of any type which could present hazards or annoyance to traffic.
 - b. Keep the surface of all pavements used by the public free and clean of all debris, timber, roofing, and masonry or other obstructions to provide safe traveled ways.
 - c. Control dust and keep the traveled way free from materials spilled from hauling and construction equipment.
 - d. Provide all cones, barricades, signs and warning devices as may be required and/or as ordered by Owner Representative to safely carry out the foregoing. All such signs and devices shall be fabricated and placed in accordance with the latest "Federal Manual on Uniform Control Devices". Use of Open Flares Is Prohibited.
 - 4. Ingress and Egress
 - a. Contractor shall provide and maintain at all times safe and adequate ingress and egress to and from site at existing or at new access points consistent with work, unless otherwise authorized by the Owner's Representative.
 - 5. If, upon notification by Owner's Representative or Architect, and the contractor fails to correct any unsatisfactory condition within 24 hours of being so directed, Owner's Representative and Architect will immediately proceed with adequate forces to properly maintain the project and the entire cost of such maintenance shall be deducted (back charged) from any moneys due the contractor
 - 6. All traffic control costs shall include the base bid of furnishing all labor, material and equipment including the cost of any and all incidental required by job conditions as ordered by Yonkers Public Schools

1.8 FIRE PREVENTION AND CONTROL

- A. The Contractor shall provide Fire Extinguishers as follows: Provide type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical fires or grease-oil-flammable liquid fires. In other locations provide either type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.
 - 1. All required exits, fire alarm, security, automatic temperature control, PA, sprinkler and similar systems shall be maintained and operable throughout the entire construction contract.
 - a. Contractor(s) will be back-charged for all fines imposed for false alarms or service calls.
- B. Free access to fire hydrants and standpipe connections shall be maintained at all times during construction operations. Portable fire extinguishers shall be provided by the the Contractor and made conveniently available throughout the construction site. Contractor(s) shall notify their employees of the location of the nearest fire alarm box at all locations where work is in progress.
- C. The Contractor shall take all possible precautions for the prevention of fires. Where flame cutting torches, blow torches, or welding tools are required to be used within the building, their use shall be as approved

by the Construction Manager at the site. When welding tools or torches of any type are in use, have available in the immediate vicinity of the work a fire extinguisher of the dry chemical 20 lbs. Type. The fire extinguisher(s) shall be provided and maintained by the Contractor doing such work.

- D. Fuel for cutting and heating torches shall be gas only and shall be contained in Underwriters laboratory approved containers.
- E. Storage of gas shall be in locations as approved by the Owner and subject to Fire Department regulations and requirements.
- F. No volatile liquids shall be used for cleaning agents or as fuels for motorized equipment or tools within a building except with the express approval of the Owner and/or Architect and in accordance with local codes. On-site bulk storage of volatile liquids shall be outside the buildings at locations directed by the Owner, who shall determine the extent of volatile liquid allowed within the building at any given time.

1.9 PERSONNEL IDENTIFICATION

- A. Provide identification badge or other approved identification to each person authorized to enter premises.
 - 1. Badge To Include: Personal photograph, name and employer.
- B. Maintain a list of accredited persons, submit copy to Yonkers Public Schools on request.

1.10 RESTRICTIONS

- A. Do not allow cameras on site or photographs taken except by written approval of Yonkers Public Schools.

PART 2 PRODUCTS -

2.1 MATERIALS

- A. Refer to Section 01 5000 - Temporary Facilities and Controls for additional barrier requirements.
- B. Signs shall be made of sturdy plywood of 1/2" minimum thickness and shall be made to legible at a distance of 50 feet.

PART 3 EXECUTION

3.1 GENERAL

- A. In the performance of its contract, the Contractor shall exercise every precaution to prevent injury to workers and the public or damage to property.
 - 1. The Contractor shall, at their own expense, provide temporary structures, place watchmen, design and erect barricades, fences and railings, give warnings, display such lights, signals and signs, exercise such precautions against fire, adopt and enforce such rules and regulations, and take such other precautions as may be necessary, desirable or proper or as may be directed.
 - 2. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work to be done under this contract. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss including but not limited to:
 - a. All employees working in connection with this contract, and other persons who may be affected thereby.
 - b. All the work materials and equipment to be incorporated therein whether in storage on or off site; and including trees, shrubs, lawns, walks, pavements, facilities not designated for removal, relocation or replacement in the course of construction.
- B. The Contractor's duties and responsibilities for the safety and protection of the work: shall continue until such time as all the work is completed and contractor has removed all workers, material and equipment from the site, or the issuance of the certificate of final completion, whichever shall occur last.
- C. The Contractor shall use only machinery and equipment adapted to operate with the least possible noise, and shall so conduct his operations that annoyance to occupants of the site and nearby homes and facilities shall be reduced to a minimum

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- D. It shall be the responsibility of the Contractor to insure that all employees of the contractor and all subcontractors, and any other persons associated with the performance of their contract shall comply with the provisions of this specification.
- E. The Contractor shall clean up the site daily and keep the site free of debris, refuse, rubbish, and scrap materials. The site shall be kept in a neat and orderly fashion. Before the termination of the contract. The Contractor shall remove all surplus materials, falsework, temporary fences, temporary structures, including foundations thereof.
- F. The Contractor shall follow all rules and regulations put forth in the Code of Federal Regulations (OSHA Safety and Health Standards).

END OF SECTION

SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Submittals.
- B. References and standards.
- C. Control of installation.
- D. Mock-ups.
- E. Tolerances.
- F. Manufacturers' field services.
- G. Defect Assessment.

1.3 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittal procedures.
- B. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.4 REFERENCE STANDARDS

- A. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2015ae1.
- B. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Yonkers Public Schools's information.
- C. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Owner's Representative.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Conformance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
 - 2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents, or for Yonkers Public Schools's information.

- D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect in quantities specified for Product Data.
 - 1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, for the Yonkers Public Schools's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Yonkers Public Schools.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.6 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
- C. Obtain copies of standards where required by product specification sections.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have Work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.2 MOCK-UPS

- A. Accepted mock-ups establish the standard of quality the Architect and Architect will be the sole judge the Work.
- B. Integrated Exterior Mock-ups: construct integrated exterior mock-up as directed. Coordinate installation of exterior envelope materials and products as required in individual Specification Sections. Provide adequate supporting structure for mock-up materials as necessary.
- C. Notify Architect seven (7) working days in advance of dates and times when mock-ups will be constructed.
- D. Provide supervisory personnel who will oversee mock-up construction. Provide workers that will be employed during the construction at Project.
- E. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.
- F. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- G. Accepted mock-ups shall be a comparison standard for the remaining Work.
- H. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.4 CONTRACTOR'S TESTING AND INSPECTION

- A. Testing and Inspections shall be conducted by a qualified testing agency or special inspector as required by authorities having jurisdiction and as indicated in individual Specification Sections as the contractor's responsibility including:
 - 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
 - 2. Notifying Owner's Representative, Architect, and Contractor promptly of irregularities and deficiencies observed in the work during performance of its services.
 - 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect, Owner's Representative, and Construction Manager with copy to Contractor and to authorities having jurisdiction.
 - 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 - 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 - 6. Retesting and re-inspecting corrected work.
 - 7. All design mixes.
 - 8. Testing as required by individual specification sections.

3.5 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation,

quality of workmanship, start up of equipment, balancing of equipment, testing, and adjusting as applicable, and to initiate instructions when necessary.

- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.6 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements.
- B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION

SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Temporary electric power and light.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers, enclosures, and fencing.
- D. Vehicular access and parking.
- E. Waste removal facilities and services.
- F. Construction aids and miscellaneous services and facilities.

1.3 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements for submittals.
- B. Section 01 7000 - Execution progress cleaning.
- C. Section 01 3553 - Security and Site Safety Procedures.

1.4 REFERENCES

- A. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Refer to guidelines for Bid Conditions for "Temporary Job Utilities and Services" as prepared jointly by AGC and ASC for recommendations.

1.5 QUALITY ASSURANCE

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

1.6 PROJECT CONDITIONS

- A. General: The contractor shall provide each temporary service and facility ready for use at each location, when first needed to avoid delays in performance of work. Maintain, expand as required, and modify as needed throughout the progress of the work. Do not remove until services or facilities are no longer needed, or are replaced by the authorized use of completed permanent facilities.
- B. Temporary Use of Permanent Facilities: Regardless of previously assigned responsibilities for temporary services and facilities, the Installer of each permanent service or facility shall assume responsibility for its operation, maintenance and protection during use as a construction service or facility prior to the Owner's acceptance and operation of the facility.

- C. Conditions of Use: Operate temporary services and facilities in a safe and efficient manner. Do not overload, and do not permit temporary services and facilities to interfere with the progress of work, or occupancy of existing facility by owner. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.
- D. Temporary Construction and Support Facilities: Maintain temporary facilities in a manner to prevent discomfort to users. Take necessary fire prevention measures. Maintain temporary facilities in a sanitary manner so as to avoid health problems.
- E. Security and Protection: Maintain site security and protection facilities in a safe, lawful, publicly acceptable manner. Take measures necessary to prevent site erosion.

1.7 TEMPORARY UTILITIES

- A. Yonkers Public Schools will provide the following:
 - 1. Electrical power and metering, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
- B. Use trigger-operated nozzles, with back flow devices, for water hoses, to avoid waste of water.

1.8 DIVISION OF RESPONSIBILITIES

- A. The contractor is responsible for the following:
 - 1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, as well as the costs and use charges associated with each facility.
 - 2. Plug-in electric power cords and extension cords.
 - 3. Supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 - 4. Special power requirements for installation of its own work such as welding.
 - 5. Its own field office complete with necessary furniture, utilities, and telephone service.
 - 6. Its own storage and fabrication sheds.
 - 7. All hoisting and scaffolding for its own work.
 - 8. Collection and disposal, off site, of its own waste material.
 - 9. Collection of general waste and debris and disposing into containers provided by the Contractor.
 - 10. Secure lockup of its own tools, materials and equipment.
 - 11. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
- B. The Contractor is responsible and pays all costs for the following:
 - 1. Temporary toilets, including disposable supplies.
 - 2. Temporary wash facilities, including disposable supplies.
 - 3. Containerized bottled-water drinking-water units.
 - 4. First Aid Station and Supplies.
 - 5. Containers for non-hazardous waste and debris.
 - 6. Disposal of wastes containers.
 - 7. Barricades, warning signs, and lights.
 - 8. Security enclosure and lockup.
 - 9. Temporary Protection for existing flooring, from altered areas to exits.
 - 10. Construction aids and miscellaneous services and facilities.
 - 11. Temporary dust control.

1.9 ELECTRIC WELDERS

- A. Separate Power Sources Required: Power for electric welders and for other loads larger than the maximum allowable sizes shall be taken from portable power sources provided, paid for and operated by the Contractor or Sub-Contractor requiring the use of such equipment. Remove such power sources when no longer needed.

1.10 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to the Owner or the Architect, Engineer or the Owner's Representative. The Architect, Owner, and Construction Manager will not accept a contractor's cost or use charges for temporary services or facilities as a basis of claim for an adjustment in the Contract Sum or the Contract Time.
 - 1. Water Service Use Charges: Water from the Owner's existing water system may be used without metering, and without payment for use charges.
 - 2. Electric Power Service Use Charges: Electric power from the Owner's existing system may be used without payment of use charges. Contractor and Sub-Contractors shall exercise measures to conserve energy usage.

1.11 TELECOMMUNICATIONS SERVICES

- A. The contractor shall provide and pay for its own telephone service. Provide mobile phone service for all field superintendents and foreman.

1.12 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.
- C. Sanitary Facilities: Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with governing regulations including safety and health codes for the type, number, location, operation and maintenance of fixtures and facilities; provide not less than specified requirements. Install in locations which will best serve the project's needs.
 - 1. Responsibilities: The Contractor is responsible for temporary sanitary facilities and their maintenance, including supplies.
 - 2. Install self-contained toilets to the extent permitted by governing regulations.
 - 3. Supply and maintain toilet tissue, paper towels, paper cups and other disposable materials as appropriate for each facility for full contract duration. Provide covered waste containers for used material.
 - 4. Provide separate toilet facilities for male and female construction personnel where required by law.

1.13 BARRIERS

- A. Responsibility: General construction barriers required for the project shall be the responsibility of the Contractor
- B. Barricades, Warning Signs and Lights: Comply with recognized standards and code requirements for erection of substantial, structurally adequate barricades where needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the public, of the hazard being protected against. Provide lighting where appropriate and needed for recognition of the facility, including flashing red lights where appropriate
 - 1. Sign Materials: For signs and directory boards, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated. Provide exterior grade acrylic-latex-base enamel for painting sign panels and applying graphics.
- C. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and removals .

- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.14 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot (1.8 m) high fence around any materials or equipment stored on-site.; equip with vehicular and pedestrian gates with locks.
- C. Locate where indicated, or if not indicated, as agreed with owner. Provide enclosed portions of the site determined to be sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except through entrance gates.
 - 1. Material:
 - a. Steel fencing: Galvanized Chain Link and galvanized gates (non-climbable size).
 - b. Fabric: No. 9 GA galvanized, steel wire mesh, furnish one-piece fabric widths for fencing up to 12' in height indicated in the Contract Documents.
 - c. Framing and Accessories: End, Corner and Pull posts: 2.375" OD steel pipe.
 - d. Line Posts: Space 10'-0" O.C. maximum. 1.90" steel pipe or 1.875" x 1.625 C-sections.
 - e. Fence Rails: Locate at top and bottom of fabric. Post brace assembly - manufacturer's standard.
 - f. Wire ties: For tying fabric to line posts use wire ties spaced 12" O.C.
 - g. Height: 6'

1.15 EXTERIOR ENCLOSURES

- A. Responsibilities: The contractor is responsible for temporary enclosure.
- B. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for maintaining heating and maintenance of required ambient temperatures within the building and to prevent entry of unauthorized persons. Provide access doors, if required, with self-closing hardware and locks.
- C. Enclosure: Install tarpaulins or equivalent materials securely, using a minimum of metal framing, 4" - 20 ga. metal framing 16" o.c., and ½" plywood plus 6 mil poly for secure and weather tight protection of the school. Individual openings of 16-sq. ft. or less may be closed with plywood or similar materials.
 - 1. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures where work is being or will be performed, provide translucent tarpaulins made of nylon reinforced laminated polyethylene to admit the maximum amount of daylight and reduce the need for temporary lighting

1.16 INTERIOR ENCLOSURES

- A. Provide temporary dustproof partitions as required to separate work areas from Yonkers Public Schools-occupied areas, to prevent penetration of dust and moisture into Yonkers Public Schools-occupied areas, and to prevent damage to existing materials and equipment.
- B. Construction: Framing and gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces:
- C. Paint surfaces exposed to view from Yonkers Public Schools-occupied areas.
- D. Temporary Dustproof Partitions: The General Construction Contractor shall provide dustproof partitions to separate work area from occupied sections of building. Partitions shall be full height metal stud surfaced with minimum 1/2" Type X gypsum board with 2 layers of poly sheathing, overlapped and edges caulked.
- E. Contractor shall remove and reinstall any devices impacted by temporary partition installation. At conclusion of project electrician will again remove and reinstall these devices onto the permanent locations

1.17 SITE SAFETY AND SECURITY PROCEDURES- See Section 01 3553

1.18 VEHICULAR ACCESS AND PARKING

- A. Responsibilities: The Contractor is responsible for vehicular access and parking and all costs shall be included in their bid.
- B. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- C. Coordinate access and haul routes with governing authorities and Yonkers Public Schools.
- D. Provide and maintain access to fire hydrants, free of obstructions.
- E. Existing parking areas may not be used for construction parking unless designated and approved by the Owner.

1.19 WASTE REMOVAL

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. The Contractor shall provide containers, at grade, sufficient for the depositing of non-hazardous/non-toxic waste materials, and shall remove such waste materials from project site as required or directed by the Owner's representative.
 - 1. Provide specific containers for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 2. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 3. Contractors shall not utilize the Owner's bins or dumpsters.
- C. The Contractor shall broom clean the work area at the end of each work day.
 - 1. If the contractor fails to clean areas at the end of each work day the Owner shall perform the cleaning and back charge the contractor accordingly.
- D. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- E. Provide containers with lids. Remove trash from site periodically.
- F. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
- G. The contractor shall be responsible for daily cleaning up of spillage and debris resulting from its operations and from those of its subcontractors; and shall be responsible for complete removal and disposition of hazardous and toxic waste materials.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- H. Burying or burning of waste materials on the site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. Provide rodent proof containers located on each floor level to encourage depositing of garbage and similar wastes by construction personnel.
- J. Site: The Contractor shall maintain Project site free of waste materials and debris.
- K. Installed Work: Keep installed work clean. The Contractor shall clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- L. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- M. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

- N. Work Areas: The Contractor shall clean areas daily where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- O. The Contractor is responsible to provide dust protection for their construction-related activities.
- P. If daily cleaning and dust protection is not provided the Contractor will be back charged for cleanup performed by employees of the Owner or a separate contractor retained by the Owner.

1.20 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION -

3.1 STORAGE FACILITIES

- A. The Contractor and each subcontractor shall provide temporary storage facilities as required for his own use. Temporary structures shall be located at the fenced staging area, and shall be removed upon completion of the work or when directed.
- B. Materials delivered to the site shall be safely stored and adequately protected against loss or damage. Particular care shall be taken to protect and cover materials that are liable to be damaged by the elements.
- C. Due to limited on site storage space, the Contractor shall coordinate delivery of his materials with the Owner's Representative who will determine when large deliveries shall be made and shall be designate storage locations on site for delivered materials. All stored materials must be stored in locked, watertight trailers, paid for by applicable contractor.

3.2 SCAFFOLDING AND STAGING

- A. All scaffold, staging and appurtenances thereto shall comply in total to the requirements of Safety and Health Regulations for Construction Chapter XVII of OSHA, Part 1926 and all related amendments.
- B. Contractor shall provide any required scaffolding required for the completion of it's work.
- C. The grade level of all scaffolding shall be protected from unauthorized entry. Provide 8' high plywood enclosure addequatly secured to the scaffold.

3.3 ROOF PROTECTION

- A. The Contractors shall provide temporary protection on any existing roof surface when it is necessary for work to take place on completed sections. The contractor
- B. Upon such notification as required in subparagraph A, the Contractor shall assume responsibility for damages, if any, to the roofing system caused by the work of other trades, except that financial liability for any and all damages rests with the offending trade.

3.4 FIRE PREVENTION AND CONTROL

- A. Refer to Section 01 3553 - Site Safety and Security Procedures.
- B. The Contractors shall comply with the safety provisions of the National Fire Protection Association's "National Fire Codes" pertaining to the work and, particularly, in connection with any cutting or welding performed as part of the work

3.5 DISCONTINUE, CHANGES AND REMOVAL

- A. The Contractors shall:

1. Discontinue all temporary services required by the Contract when so directed by the Architect. and Owner's Representative.
2. The discontinuance of any such temporary service prior to the completion of the work shall not render the Owner liable for any additional cost entailed thereby and each Contractor shall thereafter furnish, at no additional cost to the Owner, any and all temporary service required by such Contractors work.
3. Remove and relocate such temporary facilities as directed by the Architect. and Owner's Representative without additional cost to the Owner, and shall restore the site and the work to a condition satisfactory to the Owner.

3.6 ENVIRONMENTAL PROTECTION:

- A. The Contractor shall provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near Project site.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. General product requirements.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations and procedures.
- F. Maintenance materials, extra materials

1.3 RELATED REQUIREMENTS

- A. Section 01 4000 - Quality Requirements: Product quality monitoring.

1.4 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
- C. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- D. Substitutions: Changes in products, materials, equipment, and methods of construction from those required or specified by the Contract Documents and proposed by Contractor.
- E. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers. Other than Basis of Design products, all other manufacturer's are considered as substitutions and shall be submitted as such.
- F. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

1.5 SUBMITTALS

- A. Refer to 01 3000 - Administrative Requirements.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.6 QUALITY ASSURANCE

- A. GreenScreen Chemical Hazard Analysis: All ingredients of 100 parts-per-million or greater evaluated using GreenScreen (METH).
 - 1. Good: GreenScreen (LIST) evaluation to identify Benchmark 1 hazards; a Health Product Declaration includes this information.
 - 2. Better: GreenScreen Full Assessment.
 - 3. Best: GreenScreen Full Assessment by GreenScreen Licensed Profiler.
 - 4. Acceptable Evidence: GreenScreen report.
- B. Health Product Declarations (HPD): Complete, published declaration with full disclosure of known hazards, prepared using HPDC (Tool); HPD's with "unknown" listed for any hazard will not be considered acceptable.

1.7 ASBESTOS

- A. Asbestos: All products, materials, etc., used in conjunction with this Project shall be Asbestos-Free.
 - 1. Contractor shall provide a certified letter to the Owner stating that no asbestos containing material has been used in this project. Refer to Section 01 7800 - Closeout Submittals.

PART 2 PRODUCTS

2.1 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by the Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Yonkers Public Schools, or otherwise indicated as to remain the property of the Yonkers Public Schools, become the property of the Contractor(s) and shall be remove from site.

2.2 NEW PRODUCTS

- A. Provide new products for all uses unless otherwise specifically required or permitted by the Contract Documents.
- B. DO NOT USE products having any of the following characteristics:
 - 1. Made outside the United States, its territories, Canada, or Mexico.
 - 2. Made using or containing CFC's or HCFC's.
 - 3. Containing lead, cadmium, asbestos.
- C. Where all other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 6116.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
 - 3. Have a published GreenScreen Chemical Hazard Analysis.

2.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named. Submit on form attached.

- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section "Administrative Requirements". All products, other than "Basis of Design", shall be submitted as a substitution. Show compliance with requirements. Submit on form attached

2.4 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
 - 1. Deliver to Project site; obtain receipt prior to final payment. Store where directed by the Owner.

PART 3 EXECUTION

3.1 SUBSTITUTION PROCEDURES

- A. **Architect will consider requests for substitutions only within 7 days after date** Letter of Award.
- B. Substitutions will not be considered during the bidding phase.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request for substitution constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Yonkers Public Schools.
 - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure (after contract award):
 - 1. Substitution Request Form: Use form provided in this Section.
 - 2. Submit in electronic PDF format one copy of request for substitution for consideration. Limit each request to one proposed substitution.
 - 3. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
 - 4. Statement indicating why specified material or product cannot be provided.
 - 5. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - 6. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 7. Samples, where applicable or requested.
 - 8. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - 9. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - 10. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
 - 11. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified

product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

12. Cost information, including a proposal of change, if any, in the Contract Sum.
13. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
14. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
15. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 30 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.
16. Architect will notify Contractor in writing of decision to accept or reject request.

3.2 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.3 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.

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PRODUCT REQUIREMENTS

- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

SUBSTITUTION REQUEST FORM

SUBSTITUTION REQUEST No. _____

(After the Bidding Phase)

Project: Cafeteria & 3rd Floor Emergency Egress Improvements

Substitution Request Number: _____

From: _____

Date: _____

A/E Project Number: 19366.00

Contract For: _____

Specification Title: _____ Description: _ - _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution:

Manufacturer: _____ Address: _____ Phone: _____

_____ model no.: _____

Installer: _____ Address: _____ Phone: _____

History: _____ New product _____ 2-5 years old _____ 5-10 yrs old _____ More than 10
years old

Differences between proposed substitution and specified product:

Point-by-point comparative data attached - REQUIRED

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

Date Installed: _____

Proposed substitution affects other parts of Work: ___ No ___ Yes; explain

Savings to Owner for accepting substitution: _____ (\$ _____)

Proposed substitution changes Contract Time: ___ No ___ Yes Add _____ Deduct _____ days.

Supporting Data Attached: ___ Drawings ___ Product Data ___ Samples ___ Tests Reports

The Undersigned certifies:

Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.

Same warranty will be furnished for proposed substitution as for specified product.

Same maintenance service and source of replacement parts, as applicable, is available.

Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.

Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.

Proposed substitution does not affect dimensions and functional clearances.

Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

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PRODUCT REQUIREMENTS

Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments:

A/E's REVIEW AND ACTION

___ Substitution approved - Make submittals in accordance with Specification Section 01330

___ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.

___ Substitution rejected - Use specified materials.

___ Substitution Request received too late - Use specified materials.

: _____ Date: _____

Additional Comments: ___ Contractor ___ Subcontractor ___ Supplier ___ Manufacturer ___ A/E

END OF SECTION

**SECTION 01 7000
EXECUTION**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective removals .
- C. Removals and dust control.
- D. Inspections prior to start of work.
- E. Cutting and patching.
- F. General installation of products.
- G. Progress cleaning.
- H. Protection of installed construction.
- I. Correction of the Work.
- J. Dust control
- K. Cleaning and protection.
- L. Final Cleaning.
- M. Starting of systems and equipment.
- N. Demonstration and instruction of Yonkers Public Schools personnel.
- O. Closeout procedures, including Contractor Correction Punch List, except payment procedures.
- P. General requirements for maintenance service.

1.3 RELATED REQUIREMENTS

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- B. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
- C. Section 01 5000 - Temporary Facilities and Controls.
- D. Section 10 00250 - 10 00250
- E. Section 01 3553 - Security Procedures
- F. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.
- G. Section 07 8400 - Firestopping.
- H. Section 07 9005 - Joint Sealers
- I. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.4 REFERENCE STANDARDS

- A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Yonkers Public Schools or separate Contractor.

1.6 QUALIFICATIONS

- A. Refer to Section 00 4401 Qualifications of Bidders.
- B. Refer to individual sections for additional requirements.

1.7 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- C. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
 - 1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Yonkers Public Schools.
- D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
 - 3. Indoors: Limit conduct of especially noisy interior work to the hours of 6 pm to 7 am.

1.8 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate completion and clean-up of work of separate sections.
- C. After Yonkers Public Schools occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Yonkers Public Schools's activities.
- D. General: The General Construction Contractor includes general coordination of the entire work of the project, including preparation of general coordination drawings, diagrams and schedules and control of site utilization from the beginning of construction activity through project closeout and warranty periods.
- E. Alterations: Where applicable, requirements of the contract documents apply to alteration work in the same manner as to new construction. Refer to drawings for specific requirements of alteration work. Primarily, alterations can be described as normal architectural, mechanical and electrical alterations. Contractors shall review phasing and scheduling of the work to understand that certain areas of work must be completed and occupied prior to start of other work. This is essential to the Owner in their ability to maintain the educational programs during construction.

1.9 CODES, PERMITS, FEES, ETC. Refer to Section 01 4100 Regulatory Requirements

- A. The Yonkers Public Schools shall file and obtain the Building Permit.
- B. The Contractor shall furnish and pay for all permits, fees and other installation costs required for the various installations by governing authorities and utility companies; prepare and file drawings and diagrams required; arrange for inspections of any and all parts of the work required by the authorities and furnish all certificates necessary to the Architect and Owner as evidence that the work installed under this Section of the Specifications conforms with all applicable requirements of the Municipal and State Codes, National Board of Fire Underwriters, National Electric Code.
- C. Any items of work specified herein and shown on the drawings which conflict with aforementioned rules, regulations and requirements, shall be referred to the Architect and Owner for decision, which decision shall be final and binding.
- D. The work shall not be deemed to have reached a state of completion until the certificates have been delivered.
- E. The building is to be constructed under the following Rules and Regulations of the New York State Uniform Fire and Building Codes known as the "Building Codes of the State of New York" and consist of the following:
 - 1. Building Code of New York State
 - 2. State Education Department Planning Standards, including Commissioner's Regulation Part 155.5, 155.7
 - 3. Energy Conservation Construction Code of New York State
 - 4. Fire Code of New York State
 - 5. Fuel Gas Code of New York State
 - 6. Mechanical Code of New York State
 - 7. Plumbing Code of New York State
- F. State Education Department: Planning Standards is applicable to the work. Any conflicts between the Building Codes of New York and the State Education Department Planning Standards, the most restrictive shall apply. Copies of the Planning standards are available at the SED web site.

1.10 MANDATORY OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

- A. Pursuant to NYS Labor Law §220-h - On all public work projects all laborers, workers and mechanics working on the site are required to be certified as having successfully completed an OSHA construction safety and health course of at least 10 hours prior to performing any work on the project.

PART 2 PRODUCTS

2.1 MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.
- D. Barriers shall be constructed of sturdy lumber having a minimum size of 2 x 4.
 - 1. Signs shall be made of sturdy plywood of 1/2" minimum thickness and shall be made to legible at a distance of 50 feet.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Prior to start of construction take photographs, video's or similar documentation as evidence of existing project conditions as follows:
 - 1. Interior views: Each room and areas of outside work area which could be construed as damaged caused by the contractor.
 - 2. Exterior views: Each area of work and areas of outside work area which could be construed as damage caused by the contractor.
- B. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 REMOVAL AND DUST CONTROL

- A. The following procedures shall be followed when removals will create dust:
 - 1. Exterior
 - a. Work must be in compliance with OSHA Construction Standard (29 CFR 1926.62).
 - b. Windows directly below, above and adjacent to the work area shall be closed.
 - c. Provide tarps on the outside of the building to catch all dust, debris and paint chips when items are being removed and installed.
 - d. Roof top exhaust fans and HVAC equipment to shut down and intakes covered.
 - 2. Interior:
 - a. Floor surfaces shall be provided with a minimum of one layer of six mil plastic.
 - b. All air vents in the room shall be closed, shut off and sealed.
 - c. Access to all rooms undergoing removals shall be restricted to prevent unauthorized entry.
 - d. All moveable objects will be moved away from the vicinity of the removals by the Contractor. The Contractor shall cover with a drop cloth.
 - e. All corridors used by Contractors shall be mopped and left clean daily.
 - 3. Contractor shall provide labor for daily cleanup on the interior and the exterior of the building as required or directed by the Owner's Representative. Any visible debris shall be removed prior to occupancy the following day.
 - 4. All debris shall be disposed of properly in accordance with Federal, State and Local Regulations. Refer to Section 01 5000 - Temporary Facilities and Controls sections for containers required.
 - 5. Do not leave any openings unprotected at end of work day or during periods of excessive cold weather or precipitation.
 - 6. At completion of each work area HEPA vacuumed and wet wiped.

3.4 CHEMICAL FUMES AND OTHER CONTAMINATES

- A. The Contractor shall be responsible for the control of chemical fumes, gases and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, etc., to ensure they do not enter occupied portions of the building or air intakes.
- B. The Contractor shall be responsible to ensure that activities and materials which result in “off-gassing” of volatile organic compounds such as glues, paints, furniture, carpeting, wall covering, drapery, etc., are scheduled, cured or ventilated in accordance with manufacturer’s recommendations before a space can be occupied.

3.5 GENERAL INSTALLATION REQUIREMENTS

- A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- D. Saw cut all concrete slabs and asphalt paving.
- E. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- F. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- G. Make neat transitions between different surfaces, maintaining texture and appearance.

3.6 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
 - 1. Verify that construction and utility arrangements are as shown.
 - 2. Report discrepancies to Architect before disturbing existing installation.
 - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.
 - 1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
 - 1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
 - 2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.
- D. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
 - 3. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- E. Services (Including but not limited to HVAC, Plumbing, and Electrical): Remove, relocate, and extend existing systems to accommodate new construction.
 - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.

2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 - a. Identify new equipment installed, but not in service, with appropriate signage or other forms of identification, indicating "Not in Service".
 - b. Disable existing systems only to make switchovers and connections; minimize duration of outages.
 - c. Provide temporary connections as required to maintain existing systems in service.
 - d. Perform all switchovers, shutdowns, etc after hours, weekends, holidays or times when the building is not occupied. All switchover scheduling shall be approved by the Owner.
 4. Verify that abandoned services serve only abandoned facilities.
 5. Remove conduits, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
 4. Patch as specified for patching new work.
- G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- I. Refinish existing surfaces as indicated:
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
 2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- J. Clean existing systems and equipment.
- K. Remove debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- L. Do not begin new construction in alterations areas before removals are complete.
- M. Comply with all other applicable requirements of this section.

3.7 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the work.
 2. Fit products together to integrate with other work.
 3. Provide openings for penetration of electrical and other services.
 4. Match work that has been cut to adjacent work.
 5. Repair areas adjacent to cuts to required condition.
 6. Repair new work damaged by subsequent work.
 7. Remove samples of installed work for testing when requested.
 8. Remove and replace defective and non-conforming work.

- D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
- E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- F. Restore work with new products in accordance with requirements of Contract Documents.
- G. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to full thickness of the penetrated element.
- I. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
- J. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where new work abuts or aligns with existing, perform a smooth and even transition.

3.8 SPECIAL REQUIREMENTS

- A. All existing systems are required and shall remain operational during the performance of the work.
- B. Notwithstanding anything contained in the Contract Documents to the contrary, the contractor shall not be permitted to disrupt operation of any building system or any of the services without Owner's prior written consent, which shall not be unreasonably withheld. Any request to perform such work shall be in writing, received by Owner and Architect no less than 5 working days prior to the commencement of the request for disruption, and shall detail:
 - 1. The exact nature and duration of such interruption;
 - 2. The area of the Building affected, and;
 - 3. Any impact upon the Construction Schedule caused by such proposed temporary disruption. All Work shall be performed during the hours and on the days set forth in the Specifications.

3.9 WATCHMAN

- A. The Owner will not provide watchman. The Contractor will be held responsible for loss or injury to persons or property or work where his work is involved and shall provide such watchman and take such precautionary measures as he may deem necessary to protect his own interests.

3.10 SECURITY SYSTEM Refer to 01 3553 - Security Procedures

- A. The existing building contains a security alarm system maintained and operated by the Owner. Access into the existing building shall not be permitted unless the owner is notified and arrangements made to deactivate the system.

3.11 VERIFICATION OF CONDITIONS

- A. All openings, measurements, door frames, existing conditions and other similar items or conditions shall be field measured prior to submission of any shop drawings or manufacturers literature for approval.
 - 1. Each Contractor shall investigate each space into and through which equipment must be moved. Equipment shall be shipped from manufacturer in sections, of size suitable for moving through restricted spaces. Where sectional fabrication and or delivery cannot be achieved, openings, enlargements etc shall be provided by each contractor whose equipment requires access, at no additional cost to the Owner.

3.12 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
- E. The Contractor is responsible for their own daily debris removal into containers provided by the Contractor. Working areas are to be broom swept on a daily basis by the Contractor.
- F. The Contractor is responsible to provide dust protection for their construction-related activities.
- G. If daily cleaning and dust protection is not provided the Contractor will be back charged for cleanup performed by employees of the Owner or a separate contractor retained by the Owner.

3.13 PROTECTION OF INSTALLED WORK

- A. The Contractor shall be responsible for the protection of all his work and shall make good all damage to the Owners property, adjoining property, and/or to any work or material in place in the premises, or included in his contract, which is caused by his work or workmen. which may occur to his work prior to the date of the final acceptance.
 - 1. From the commencement to the completion of the Project, the Contractor shall keep the parts of the work and the buildings free from accumulation of water no matter what the source or cause.
- B. The Contractor shall be held responsible for and be required to make good at his own expense any and all damage done to the Owners property, adjoining property, and/or to any work or material in place in the premises, or included in his contract, which is caused by his work or workmen.
- C. Protect installed work from damage by construction operations.
- D. Provide special protection where specified in individual specification sections.
- E. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- F. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- G. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- H. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- I. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- J. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.

3.14 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.15 DEMONSTRATION AND INSTRUCTION

- A. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.

3.16 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Refer to Individual Sections for Testing, adjusting, and balancing of systems: .

3.17 FINAL CLEANING

- A. Final cleaning shall be the responsibility of the contractor and all costs for final cleaning shall be included in the Base Bid. Final cleaning responsibility shall be limited to all new additions and areas where renovations occur.
- B. Execute final cleaning prior to final project assessment.
- C. Use cleaning materials that are nonhazardous.
- D. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces,
- E. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- F. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- G. Replace filters of operating equipment.
- H. Clean debris from roofs, gutters, downspouts, overflow drains, and area drains.
- I. Clean site; sweep paved areas, rake clean landscaped surfaces.
- J. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.
- K. 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.
- L. 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.
- M. Remove snow and ice to provide safe access to building.
- N. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
- O. Wax all resilient flooring.
- P. Remove labels that are not permanent.
- Q. Touch up and otherwise repair and restore marred, exposed finishes and surfaces evidence of repair or restoration. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show
- R. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
- S. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

- T. Clean ducts, blowers, and coils if units were operated without filters during construction.
- U. 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.
- V. Leave Project clean and ready for occupancy.

3.18 CLOSEOUT PROCEDURES Refer to Section 01 7800
END OF SECTION

SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Substantial Completion.
B. Final Completion.
C. Project Record Documents.
D. Warranties and bonds.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion:
1. Advise Owner's Representative and Architect of pending insurance changeover requirements.
 2. Obtain and submit releases permitting Owner's Representative and Architect unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 3. Substantial Completion shall be when all work is completed, including all punch lists.
- B. Prior to issuance of the Certificate of Substantial Completion, submit, in writing, a request to the Owner's Representative and Architect a request to perform site inspection for the purpose of preparing a "punch list".
- C. Certificate of Substantial Completion will be issued **after completion of all punch list items** or Owner's Representative and Architect will notify Contractor of items, either punch list or additional items identified by Architect, **that must be completed or corrected before certificate** will be issued. After completion of "punch list" items submit the following:
1. Application for Payment showing 100 percent completion for portion of the Work claimed as substantially completed the following:
 2. Manufacturer's Warranties (guarantees).
 3. Contractor's Warrantee (Five Years) and extended warranties.
 4. Maintenance agreements, if any.
 5. Manifest for disposal of Hazardous material.
 6. Final cleaning.
 7. List of incomplete Work, recognized as exceptions to Architect's "punch list".
 8. Architect's punch list certifying all punch list items have been completed with each item signed off by the Owner's Representative and Contractor.
 9. Removal of temporary facilities and services.
 10. Removal of surplus materials, rubbish and similar elements.
 11. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 12. As Built Drawings.
 13. Project Record Documents.
- D. Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
1. If necessary re-inspection will be repeated and the contractor shall pay for all additional inspections.

2. Results of completed inspection will form the basis of requirements for Final Completion

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 1. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Owner's Representative and Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will not process a final Certificate for Payment until after the inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - a. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
- B. Following Final Inspection acceptance of work submit the following:
 1. Submit a final Application for Payment according to Section 01 2000 - Price and Payment Procedures.
 2. Submit certified copy of Architect's Substantial Completion punch list items endorsed and dated Contractor and Owner's Representative certifying each item has been completed or otherwise resolved for acceptance.
 3. Update final statement, accounting for final changes to the Contract Sum.
 4. Release of liens from contractor and all entitles of the contractor.
 5. Consent of Surety to Final Payment, AIA Document G707
 6. Final Liquidated Damages settlement statement.
 7. Contractor's Affidavit of Release of Liens (AIA G706A).
 8. Contractors Affidavit of Payment of Debts and Claims (AIA G706).
 9. Contractor's Certification of Payment of Prevailing Wage Rates.
 10. Contractor's Certified Statement that no asbestos containing material was incorporated into the project.
 11. Asbestos manifest.

1.5 SUBMITTALS

- A. Contractor shall submit all documentation identified in this section within thirty (30) working days from the time the Contractor submits the list of items to be corrected, in addition to other rights of the Owner set forth elsewhere in the Contract Documents, to include but not limited to withholding of final payment. If the documentation has not been submitted within Thirty (30) day period, the Owner will obtain such through whatever means necessary. The Contractor shall solely be responsible for all expenses incurred by the Owner, provided the Owner has advised the Contractor of this action seven 7 days prior to the culmination date by written notice
- B. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- C. Warranties and Bonds:
 1. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.1 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 1. Drawings.
 2. Specifications.
 3. Addenda.

4. Change Orders and other modifications to the Contract.
 5. Reviewed shop drawings, product data, and samples.
 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Yonkers Public Schools.
 - C. Store record documents separate from documents used for construction.
 - D. Record information concurrent with construction progress.
 - E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Changes made by Addenda and modifications.
 - F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 1. Field changes of dimension and detail.
 2. Details not on original Contract drawings.

3.2 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and approved Shop Drawings at the project site.
- B. The Contractor is responsible for marking up Sections that contain its own Work and for submitting the complete set of record Specifications as specified.
- C. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
- D. Content: Types of items requiring marking include, but are not limited to, the following:
 1. Revisions to details shown on Drawings.
 2. Changes made by Change Order or Construction Change Directive.
 3. Changes made following Architect's written orders.
 4. Details not on the original Contract Drawings.
- E. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
- F. Mark important additional information that was either shown schematically or omitted from original Drawings.
- G. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- H. **Provide final record drawings on CD in PDF format.**

3.3 FORMAT

- A. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Contractor shall certify and sign.
- B. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Identify Record Drawing as follows:
 1. Project name.
 - a. Date.
 - b. Designation "PROJECT RECORD DRAWINGS."
 - c. Name of Architect and Owner's Representative.
 - d. Name of Contractor.

- e. Contractor shall certify and sign each drawing

3.4 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.5 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Yonkers Public Schools's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.

**CHECKLIST FOR PROJECT CLOSEOUT
AND PROCESSING OF FINAL PAYMENT**

A. **PROJECT:** Cafeteria & 3rd Floor Emergency Egress Improvements.

BOARD OF EDUCATION BID NUMBER;

CLOSE-OUT SUBMITTALS: (As Applicable)

- PREVAILING WAGE CERTIFICATION.**
- UL CERTIFICATION**
- ALL APPROVED SHOP DRAWINGS.**
- CERTIFICATES OF COMPLIANCE AND INSPECTION. (WHERE APPLICABLE
MANUFACTURER'S REPORTS, ELECTRIC, ELEVATOR, ETC.)**
- NOTARIZED STATEMENT THAT ONLY NON-ASBESTOS MATERIALS
WERE INSTALLED ON THIS PROJECT.**
- FULLY EXECUTED CERTIFICATE OF SUBSTANTIAL COMPLETION: AIA
G704.**
- CONTRACTOR'S WRITTEN FIVE-YEAR WARRANTY, MANUFACTURER'S
WARRANTY, AND EXTENDED WARRANTIES (IF ANY REQUIRED).**
- PROJECT RECORD DOCUMENTS: SECTION 01 7800.**
- AS-BUILT DRAWINGS.**

EVIDENCE OF PAYMENT AND RELEASE OF LIEN

- CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS: AIA G706.**
- CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS - AIA G706A PRIME
CONTRACTORS AND SUBCONTRACTORS.**
- CONSENT OF SURETY TO FINAL PAYMENT AIA G707.**

**REFER TO SECTION 01 7800 PAR 1.4 AND 1.5 FOR ADDITIONAL REQUIREMENTS. FINAL
PAYMENT WILL NOT BE PROCESSED UNTIL ALL ITEMS INDICATED ARE RECEIVED
IN ACCORDANCE WITH SECTION 01 7800 - CLOSEOUT SUBMITTALS.**

END OF SECTION

SECTION 03 0100
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.
- B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

- A. Repair of deteriorated concrete.

1.3 RELATED REQUIREMENTS

- A. Section 09 9113 - Exterior Painting.

1.4 PRICE AND PAYMENT PROCEDURES

1.5 REFERENCE STANDARDS

- A. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- B. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2013.
- C. ASTM C1260 - Non-reactive Aggregate
- D. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair; 2013.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than ten (10) years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with minimum of five (5) of documented experience, and approved by manufacturer.

1.8 MOCK-UP(S)

- A. Test each type of maintenance procedure required on each type of existing construction, to determine the most appropriate procedures to use and as a record of expected results.
- B. Locate mock-up(s) where directed by the Architect and Construction Manager
- C. Satisfactory mock-up(s) may remain as part of the work.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling of products.

PART 2 PRODUCTS

2.1 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
 - 1. Sika Corporation, Lyndhurst, NJ 07071, 800.933.7452.
 - 2. Substitutions: 01 6000 - Product Requirements.

- B. Cementitious Repair Mortar, Horizontal/Slope: One component, factory-mixed, polymer-modified cementitious mortar, rapid hardening, early strength gain, cementitious, patching mortar for concrete.
1. Compressive Strength: ASTM C 109.
 - a. 1 day 4,000 psi.
 - b. 7 days 5,000 psi.
 - c. 28 days 7,000 psi
 2. Modulus of Elasticity in Compression: ASTM C 469 28 days 4.6 x 10⁶ psi.
 3. Flexural Strength: ASTM C469
 - a. 1 day 700 psi (4.8 MPa)
 - b. 7 days 900 psi (6.2 MPa)
 - c. 28 days 1,000 psi
 4. Abrasion Resistance: ASTM C157: 28 days 0.026 inch.
 5. Freeze-Thaw Stability ASTM C666: 28 days 98%.
 6. Refer to Manufacture's data sheets for additional requirements.
 7. Products:
 - a. SikaQuick1000, Concrete Repair.
- C. Cementitious Repair Mortar. Troweled vertical and overhead: One component, factory-mixed, polymer-modified cementitious mortar:
1. Compressive Strength, psi (ASTM C-109):
 - a. 3,000 psi. @ 1 day.
 - b. 5,500 @ 28 days.
 2. Flexural Strength ASTM C293: 28 days 1,000 psi.
 3. Slant Shear Strength ASTM C822: 28 days 2,000 psi
 4. Lift Height:
 - a. Min: 1/8" or as recommended by the manufacturer.
 - b. Max: 3" or as recommended by the manufacturer.
 5. Time Between Lifts: 30-40 min. After final set. ASTM C-266
 6. Product: SikaQuick VOH, Sika Corporation, Lyndhurst, NJ 07071. 800.933.7452.
- D. Flowable Concrete Repair: One component, factory-mixed, polymer-modified cementitious mortar consolidating concrete containing factory blended coarse aggregate.
1. Compressive Strength: ASTM C 39.
 - a. 1 day 2,000 psi.
 - b. 7 days 5,500 psi.
 - c. 28 days 6,500 psi
 2. Flexural Strength: ASTM C3448
 - a. 28 days 1,250 psi
 3. Splitting Tensile Strength ASTM C496:
 - a. 7 days 750 psi.
 - b. 28 days 1,000 psi
 4. Refer to Manufacture's data sheets for additional requirements.
 5. Product: SikaCrete 211.
- E. Bonding Agent: and Rebar coating: Cementitious epoxy resin compensated 3-component, solvent-free, coating material with corrosion inhibitor used as bonding primer and reinforcement corrosion protection.
1. Compressive Strength: ASTM C 109.
 - a. 3 day 4,500 psi.
 - b. 7 days 6,500 psi.

- c. 28 days 8,500 psi
2. Flexural Strength: ASTM C348
 - a. 28 days 1,250 psi
3. Splitting Tensile Strength: ASTM C496: 28 days 600 psi.
4. Tensile Adhesion Strength Bond of steel reinforcement on concrete: ASTM C1583.
 - a. Plain reinforcement 573 psi.
5. Freeze-Thaw Stability ASTM C666: 28 days 98%.
6. Refer to Manufacture's data sheets for additional requirements.
7. Product: Sika Armetec 110 EpoCem.

2.2 ACCESSORIES

- A. Bonding Primer and Reinforcement Corrosion Protection:
 1. Cementitious epoxy resin compensated 3-component, solvent-free, coating material with corrosion inhibitor, used as bonding primer and reinforcement corrosion protection.
 2. Product: Sika® Armetec®-110 EpoCem, Sika Corporation, Lyndhurst, NJ 07071, 800.933.7452.
 3. Substitutions: 01 6000 - Product Requirements
- B. Water: Clean and potable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

- A. Prepare concrete surfaces to be repaired according to manufacturer's application instructions..

3.3 CLEANING EXISTING CONCRETE

- A. Surface must be clean and sound. Remove all deteriorated concrete, dirt, oil, grease, and other bond-inhibiting materials from the area to be repaired.
- B. Preparation work should be done by high pressure water blast, scabber, or other appropriate mechanical means. Obtain an exposed aggregate surface with a minimum surface profile of $\pm 1/8"$ (3 mm) (CSP-6) on clean, sound concrete.
- C. To ensure optimum repair results, the effectiveness of decontamination and preparation should be assessed by a pull-off test.
- D. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.
 1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
 2. Clean out cracks and voids using same methods.
- E. Do not use any of the following cleaning methods, unless otherwise indicated:
 1. Brushes with wire bristles, grinding with abrasives, solvents, hydrochloric or muriatic acid, sodium hydroxide, caustic soda, or lye.

3.4 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

- A. Remove and loose or deteriorated concrete.
- B. Saw cut perimeter to create shoulder cut a minimum of 1/2" deep.
- C. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.

- D. Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application
- E. Follow bonding agent and repair mortar manufacturer's written installation instructions.
- F. Apply coating of bonding agent to entire concrete surface to be repaired.
- G. Priming
 - 1. Reinforcing steel: Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be high pressure washed with clean water after mechanical cleaning. Steel shall be fully exposed and have all corrosion removed. Prime the reinforcement with a stiff bristle brush or spray. coat all steel surfaces, allow to dry and then apply a second coat at same coverage
 - a. Product: Sika® Armatec® 110 EpoCem (consult PDS).
 - 2. Concrete Substrate: Prime the prepared substrate with a stiff bristle brush or spray. Primer must be applied well into substrate, filling all pores and ensure complete coverage of all surface irregularities.
 - a. Product: SikaQuick®-1000. Use for Full Depth Patching

3.5 APPLICATION

- A. The prepared mortar must be scrubbed into the substrate, filling all pores and voids. Force material against edge of repair, working toward center.
- B. After filling repair, consolidate, then screed.
- C. Allow mortar to set to desired stiffness, then finish.
- D. Mixing, placing and finishing should not exceed 45 minutes

3.6 CURING TREATMENT

- A. Moist cure with wet burlap and polyethylene, or a fine mist of water.
- B. Moist curing should commence immediately after finishing. Protect freshly applied mortar from direct sunlight, wind, rain and frost
- C. Trowel finish to match adjacent concrete surfaces.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Concrete formwork.
- B. Concrete site walls and ramp walls and footings
- C. Concrete sidewalks and ramps.
- D. Concrete foundations and anchor bolts for exterior steel framing.
- E. Concrete reinforcement.
- F. Concrete curing.

1.2 RELATED REQUIREMENTS

- A. Section 07 9200 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

1.3 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.
- E. ACI 305R - Hot Weather Concreting; 2010.
- F. ACI 306R - Cold Weather Concreting; 2010.
- G. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).
- H. ACI 347R - Guide to Formwork for Concrete; 2014.
- I. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
- J. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2014.
- K. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- L. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- M. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2015.
- N. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- O. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- P. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- Q. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- R. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2013.
- S. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
- T. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars; 2001 (Reapproved 2007).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.

1.5 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.1 FORMWORK

- A. Formwork Design and Construction: Comply with guidelines of ACI 347R to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
 - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
 - 2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
 - 3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches (38 mm) of concrete surface.

2.2 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
 - 1. Type: Deformed billet-steel bars.
 - 2. Finish: Epoxy coated in accordance with ASTM A775/A775M, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement (WWR): Class A epoxy coated, deformed type, ASTM A884/A884M.
 - 1. Form: Coiled Rolls.
- C. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch (1.29 mm).
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
- C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.4 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

2.5 ACCESSORY MATERIALS

2.6 CURING MATERIALS

- A. Moisture-Retaining Sheet: ASTM C171.
 - 1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch (0.102 mm).
- B. Water: Potable, not detrimental to concrete.

2.7 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- C. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch (27.6 MPa).
 - 2. Water-Cement Ratio: Maximum 40 percent by weight.
 - 3. Maximum Slump: 4 inches (100 mm).
 - 4. Maximum Aggregate Size: 5/8 inch (16 mm).

2.8 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.
- C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.
- B. Verify existing slab elevations and coordinate final floor finish elevations with new slab.

3.2 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.3 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- C. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

3.4 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.

- B. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

3.5 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Isolation and expansion Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
 - 1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
 - 2. Install expansion joints as shown on plan or a maximum spacing of 25' within sidewalks and ramps.
- C. Control Joints:
 - 1. Spacing: Provide scored joints every 5 feet (1.5 m).
 - 2. Troweled joint with radiused edge.

3.6 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch (6 mm) or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch (6 mm) or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge, 1/4 inch radius (6 mm radius).
 - 2. Wheelchair Ramps: Broomed perpendicular to slope.

3.7 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than seven days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water-fog spray or saturated burlap.
 - 2. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches (75 mm) and seal with waterproof tape or adhesive; secure at edges.

3.8 FIELD QUALITY CONTROL

- A. An independent testing agency retained by the owner may perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.

- C. Compressive Strength Tests: ASTM C39/C39M, for each pour, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards (76 cu m) or less of each class of concrete placed.
- D. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.9 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.10 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 04 0100
MAINTENANCE OF MASONRY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Dust control.
- B. Removal and rebuilding of exterior masonry units.
- C. Repointing mortar joints.
- D. Concealed flashings.

1.3 RELATED REQUIREMENTS

- A. Section 01 5000 - Temporary Facilities and Controls.
- B. Section 07 9200 - Joint Sealants.

1.4 REFERENCE STANDARDS

- A. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- B. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2016.
- C. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; 2008.
- D. IMIABC (CW) - Recommended Practices & Guide Specifications for Cold Weather Masonry Construction; International Masonry Industry All-Weather Council; 1993.
- E. IMIABC (HW) - Recommended Practices & Guide Specifications for Hot Weather Masonry Construction; International Masonry Industry All-Weather Council; current edition.
- F. New York State Parks, Recreation & Historic Preservation Brief #2 Guidelines.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
 - 1. Require attendance of parties directly affecting work of this section.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on all material, including recommended installation procedures.
- C. Samples: Submit four samples of face brick units to illustrate matching color, texture and extremes of color range.
 - 1. For each type of mortar provide 6 inch long by 1/2 inch wide sample strips set in metal or plastic channels.
 - 2. Each type of anchor
- D. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring special attention.
- E. Material Safety Data Sheets.

1.7 QUALITY ASSURANCE

- A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of Contract Documents.

- B. Qualification: The sub-contractor with a minimum of five years experience, experienced masonry restoration and cleaning firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.
 - 1. The Installer shall directly employ the personnel performing the work of this section
 - 2. The Installer shall have a full time supervisor/foreman on the roof when roofing work is in progress. The Supervisor shall have a minimum of 5 years experience in roofing work similar in nature and scope to this project, and speak fluent English
- C. Source Limitations: Obtain each type of material for masonry restoration (face brick, cement, sand, etc.) from one source with resources to provide materials of consistent quality in appearance and physical properties.
- D. Pre-Work Conference: Attend the pre-roofing meeting and discuss the following:
 - 1. How masonry work will be performed and coordinated with other work.
 - 2. How the building will be kept watertight as masonry work progresses.
 - 3. The construction schedule, forecast weather, availability of materials, personnel, equipment and facilities needed to proceed and complete the work on schedule.

1.8 MOCK-UP

- A. Restore an existing masonry wall area sized 4 feet (120 m) long by 2 feet (60 m) high; include in mock-up area instances of mortar, accessories, and flashings.
- B. For repointing - provide 2 foot square mockups to show how the joints will be cut, and 2 foot square mockups to show new pointing
 - 1. Joint repointing shall be performed within 10 days of the award of contract in order to permit maximum drying time for mortar.
- C. How flashings will be built into the masonry.
- D. Locate where directed.
- E. Acceptable panel and procedures employed will become the standard for work of this section.
- F. Mock-up may remain as part of the Work.
- G. Allow samples to cure at least three days (or longer, if possible) before obtaining Architect or Construction Manager's approval for color match. Mortar colors will continue to lighten as they cure and are exposed to the weather, so samples should be installed as far in advance as possible. Samples should be viewed from a minimum distance of 12 feet.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Carefully pack, handle, and ship masonry units and accessories strapped together in suitable packs or pallets or in heavy cartons.
- B. Deliver material to the site in the Manufacturer's original and unopened containers and packaging, bearing labels which identify the type and names of the products and Manufacturers. Unload and handle to prevent chipping and breakage.
- C. Protect masonry materials and aggregates during storage and construction from excess wetting by rain, snow or ground water, and from staining or inter mixture with earth or other types of materials.
- D. Protect grout, mortar and cement products from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Protect liquid components from freezing.
- E. Do not overload the structure when storing materials on he roof.

1.10 FIELD CONDITIONS

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F (5 degrees C) prior to, during, and 48 hours after completion of masonry work.

- B. Maintain materials and surrounding air temperature to maximum 90 degrees F (32 degrees C) prior to, during, and 48 hours after completion of masonry work.
- C. Repoint mortar joints and repair masonry only when air temperature is between and 40 and 90 deg F and is predicted to remain so for at least 7 days after completion of work.
- D. Erect temporary covers over pedestrian walkways and at building entrances and exits which will remain active as the work progresses.
- E. Prevent mortar from staining the face of surrounding masonry and other building surfaces, immediately remove any which falls or spills. Protect sills, ledges and projections from mortar droppings.
- F. Coordinate masonry removal and restoration with the installation of new metal and membrane flashings

1.11 GUARANTEE

- A. Provide a Contractor's written Guarantee which warrants that all work will remain free of material and workmanship defects and in a watertight condition for a two year period beginning upon Final Completion:
 - 1. Defective work includes but is not limited to the following types of failure: leakage, delamination, lifting, loosening, splitting, cracking, and undue expansion.
 - 2. The Contractor's Guarantee shall provide that the Contractor will make the repairs and modifications necessary to enable the work to perform as warranted at his own expense:
 - 3. The Guarantee shall include the removal and replacement of items or materials installed as part of the original work, if removal is needed to affect guaranteed repairs.
- B. The Contractor's Guarantee shall be issued no more than 30 days before the satisfactory completion of punch list work.

PART 2 PRODUCTS

2.1 CLEANING MATERIALS

- A. Cleaning Agent: ProSoCo; Sure Klean 600 Detergent
 - 1. Application: General Cleaning of new masonry units.

2.2 MORTAR MATERIALS

- A. Use only factory premixed packaged dry materials for mortar and grout, with addition of water only at project site.
- B. Mortar Color: Match existing.
- C. Mortar Mix Designs: ASTM C270, Property Specification.
 - 1. Type N for setting mortar.
 - 2. Exterior Repointing Mortar: Type N.
 - 3. Aggregate for Mortar: ASTM C 144; except for joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

2.3 MASONRY MATERIALS

- A. Brick shall be clay or shale, ASTM C216, Type FBS, solid. Brick shall be tested for efflorescence in accordance with ASTM Test Methods C67 and the rating shall be "Not Effloresce".
 - 1. Use 100% solid brick over exterior relieving angles/lintels or other brick projections on exterior face of building. (Use of solid brick with cores is acceptable if cores are filled solid with mortar and the cores are not visible to view.)
- B. Include special bricks for corners, and other special shapes, to match the color, surface texture, shape and size of existing adjacent brick.
- C. Face Brick and Accessories: Provide face brick and accessories, including specially molded, ground, cut, or sawed shapes where required to complete masonry restoration work.

- D. Provide units with colors, surface texture, and physical properties to match existing units in size and shape.
 - 1. For sample that exhibits a range of colors, provide brick that matches that range rather than brick that matches an individual color within that range.
 - 2. Provide special shapes as indicated and required to match existing.
- E. Reinforcement Corrosion Protector and Primer: Multi-Component cementitious epoxy resin coating material used as a primer and metal reinforcing corrosion protectant.
 - 1. Armatec-110 Epo-Chem as manufactured by Sika Corporation.

2.4 MASONRY ANCHORS

- A. All reinforcement and anchors located in exterior walls shall be stainless steel.
- B. Anchors: Type and size indicated, or if not indicated, to match existing in size and type. Fabricate anchors and dowels from Type 302 or Type 304 stainless steel.
- C. Strap Anchors: Bent steel shapes configured as required for specific situations, 1/-1/2 in (37 mm) width, 0.105 in (2.7 mm) thick, lengths as required to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) of mortar coverage from masonry face, corrugated for embedment in masonry joint, stainless steel.
 - 1. Length: Verify in field.
- D. Wall Ties: Corrugated formed sheet metal, 7/8 inch (22 mm) wide by 0.05 inch (1.22 mm) thick, stainless steel, sized to provide not more than 1 inch (25 mm) and not less than 1 inch (25 mm) of mortar coverage from masonry face.
 - 1. Seismic veneer anchor with continuous wire, Hohmann & Barnard
- E. Dowels: Stainless Steel conforming to ASTM A 580 AISI Type 304.
 - 1. No.155 by Heckman Building Products. Size and thickness as required.

2.5 ACCESSORIES

- A. Weeps: Cellular, honeycomb design, polypropylene weep vents for embedding in masonry wall mortar joints;
 - 1. Material: High density polyethylene and impervious to water and resistant to UV degradation.
 - 2. Hohmann & Barnard, Inc. #QV - Quadro-Vent.

2.6 EMBEDDED FLASHING MATERIALS

- A. Flexible Flashing Membrane: For in wall flashing not exposed to the exterior: :
 - 1. Surface adhered composite membrane flashing: 40 mil. Polymeric, reinforced membrane with Elvaloy KEE. Use only where flashing is fully concealed in masonry.
 - a. Available Products:
 - a) Hyload, Inc.; Hyload Flashing Membrane, color-Tan.
 - b) Provide adhesives, preformed shapes for outside, inside and end dams. as recommended by the manufacturer.
 - c) Verify sealants specified in Section 07 9200 - Joint Sealants compatible with flashings.
 - d) Termination Bars: 1/8' x 1", stainless steel. Use at top of all flashing.
 - e) Provide preformed flashing where indicated on drawings and as follows:
 - (a) End Dams.
 - f) Provide metal drip plate with hemmed edge extending beyond lintel.
 - (a) Material: Type 304 Stainless Steel
 - (b) Thickness: 26 gage
 - (c) Depth: 3 1/2"

2.7 MORTAR MIXES

- A. Comply with ASTM C 270, Proportion Specification
 - 1. Setting mortar, use Type N.
 - 2. Pointing mortar Type N.
 - a. Verify strength of existing mortar. New mortar shall not exceed strength of existing mortar.
- B. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
 - 1. Mix to match existing.
- C. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer
 - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material
- D. Do not use admixtures of any kind in mortar, unless otherwise indicated.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces to be cleaned are ready for work of this section.

3.2 PREPARATION

- A. Protect surrounding elements from damage due to restoration procedures.
- B. Separate areas to be protected from restoration areas using means adequate to prevent damage.
- C. Cover existing landscaping with tarpaulins or similar covers.
- D. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures, including:
 - 1. Windows.
 - 2. Soft joints and sealants.
 - 3. Door frames.
 - 4. Vents, louvers and grills
- E. Close off adjacent occupied areas with dust proof partitions.
- F. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.
- G. Do not allow cleaning runoff to drain into sanitary or storm sewers.

3.3 BRICK REMOVAL AND REPLACEMENT

- A. Carefully remove bricks on a piece by piece basis. Cut out full units from joint to joint and to permit replacement with full size units. Clean the edges of remaining bricks, to remove all mortar, dust, and loose debris in preparation for rebuilding
- B. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
- C. Simultaneously remove limited sections of existing masonry; support and protect masonry remaining next to and above the removal areas
- D. Support structure as necessary in advance of cutting out units.

- E. The Contractor is responsible for performing Work in a safe manner. Provide temporary shoring or other supports as required to prevent displacement of existing masonry that is to remain. Perform the removal Work with such care as may be required to prevent failure of the masonry or damage to adjoining masonry that is to remain
- F. Cut away loose or unsound adjoining masonry and mortar as directed. Do not use impact type tools, use only rotary type grinders.
- G. Use power tools only after test cuts determine no damage to masonry units will result. Provide vacuum attachment for all grinding/cutting equipment for dust control purposes.
- H. Do not damage masonry units.
- I. Build in new units following procedures for new work. .
- J. Ensure that anchors, ties, reinforcing, and flashings are correctly located and built in.
- K. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings. Use a motor driven diamond blade saw to cut bricks with clean, sharp, unchipped edges.
- L. Wet brick which have initial rates of absorption (suction) of more than 30 grams per 30 square inches per minute, (in accordance with ASTM C 67), to ensure the bricks are nearly saturated with water, but surface dry when laid
- M. Lay replacement brick with completely filled bed, head, and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C 67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min.. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid. Maintain joint width for replacement units to match existing joints.
- N. Rake out mortar used for laying brick before mortar sets and point new mortar joints in repaired area to comply with requirements for repointing existing masonry, and at same time as repointing of surrounding area
- O. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brick work

3.4 REPOINTING

- A. Perform repointing prior to cleaning masonry surfaces.
- B. Repointing of existing joint where joint reinforcing is exposed, shall be as indicated and detailed on drawings.
- C. Cut out loose or disintegrated mortar in joints to minimum 3/4" inch (____ mm) depth or until sound unweathered mortar is reached. Use power chisels die grinder, circular grinder or other power equipment approved by the Architect.
 - 1. Test mock-up shall be performed in area directed by the Architect. Contractor shall not proceed until mock-up and methods are approved.
 - 2. Use power tools only after test cuts determine no damage to masonry units will result.
 - 3. Provide vacuum attachment for all grinding/cutting equipment for dust control purposes.
- D. Do not damage masonry units. Do not spall the edges of adjoining masonry or widen the joints. Replace any masonry which is damaged.
- E. When cutting is complete, remove dust and loose material brushing and with water jet.
- F. Pack tightly in maximum 1/2 inch (____ mm) layers. Form a smooth, compact flush joint to match existing.
- G. Slightly recess pointing mortar from the faces of the masonry units where the units have rounded edges. Do not spread mortar on the edges or faces of the masonry. Do not featheredge the mortar.

- H. Tool repointed joints to match the appearance of adjoining joints when the mortar is thumbprint hard. Remove excess mortar from the edges of the joints with a soft bristle brush
- I. Moist cure for 72 hours.
- J. Clean repointed area minimum 24" each side of repointed joints.
 - 1. Immediately after the mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, spray applied at low pressure.
 - 2. Do not use metal scrapers or brushes. Do not use acid or alkali cleaning agents
- K. Remove efflorescence by dry brushing followed by wet brushing.

3.5 REINFORCEMENT AND ANCHORAGE - GENERAL

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches (400 mm) on center.
- B. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches (600 mm) horizontally and 24 inches (600 mm) vertically.

3.6 MASONRY FLASHINGS

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
 - 1. Extend flashings full width at such interruptions and at least 4 inches (100 mm) into adjacent masonry or turn up at least 8 inches (200 mm) to form watertight pan at non-masonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend rubber flashings down and under masonry to within 1/4 inch (6 mm) of exterior face of masonry.
- C. Lap end joints of flashings at least 4 inches (100 mm) and seal watertight with mastic or elastic sealant.
- D. Provide end dams at termination of flashing at each end of lintel.

3.7 GENERAL CLEANING AND PROTECTION PROCEDURES

- A. Protect persons and surrounding surfaces of building being restored from harm resulting from masonry restoration work.
 - 1. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of restoration and cleaning work.
 - 2. Comply with cleaner manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 - 3. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless chemical cleaners being used will not damage adjacent surfaces. Use materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
 - 4. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures, including:
 - a. Windows.
 - b. Soft joints and sealants.
 - c. Door frames.
 - d. Vents, louvers and grills

5. Keep wall wet below area being cleaned to prevent streaking from runoff.
 6. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
 7. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
 8. Dispose of runoff from cleaning operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- B. Prevent mortar from staining face of surrounding masonry and other surfaces.
1. Cover sills, ledges, and projections to protect from mortar droppings.
 2. Keep wall area wet below rebuilding and pointing work to discourage mortar from adhering.
 3. Immediately remove mortar in contact with exposed masonry and other surfaces.
 4. Clean mortar splatters from scaffolding at end of each day
- C. Apply all material in strict accordance with the manufacturer's instructions.
- D. Protect people, vehicles, property, plants, non masonry surfaces from product splash, residue, wind drift and fumes.
- E. Do not apply when surface and air temperature falls below 50 degrees.

3.8 CLEANING NEW BRICK MASONRY

- A. Test surface for cleaning effectiveness.
- B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.
- C. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.
- D. Before solution dries, rinse and remove acid solution and dissolved mortar, using clean, pressurized water.
1. Apply 400-1000 psi pressure, water flow rate of 6-8 gallons per minute, to masonry surfaces, maintaining uniform depth and surface texture throughout. Use 15-45 degree fan spray. If required heat water to 150-180 degree.
 2. Let dwell 3 to 5 minutes. Do not let cleaner dry on the surface. Fresh water rinse the surfaces below areas being cleaned to prevent streaking.
 3. Repeat steps as required

3.9 FIELD QUALITY CONTROL

- A. Inspectors: Owner may engage qualified inspectors to perform inspections and prepare test reports. Allow inspectors use of lift devices and scaffolding, as needed, to perform inspections.
- B. Notify Owner's Representative, Architect, and Construction Manager in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until inspectors have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

3.10 CLEANING

- A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
- B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.
- C. Clean surrounding surfaces.

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop fabricated steel items.
- B. Miscellaneous steel framing and supports

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 05 5213 - Pipe and Tube Railings.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- D. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- H. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).
- I. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- J. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

PART 2 PRODUCTS

2.1 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
- C. Plates: ASTM A283/A283M.
- D. Bolts, Nuts, and Washers: ASTM A307, Grade A, galvanized to ASTM A153/A153M where connecting galvanized components.
- E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

- F. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.2 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.3 FINISHES - STEEL

- A. All exterior steel components and lintels in exterior walls shall be galvanized finish.
- B. Galvanizing : Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft (530 g/sq m) galvanized coating.

2.4 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch (3 mm) maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch (1.5 mm).
- C. Maximum Misalignment of Adjacent Members: 1/16 inch (1.5 mm).
- D. Maximum Bow: 1/8 inch (3 mm) in 48 inches (1.2 m).
- E. Maximum Deviation From Plane: 1/16 inch (1.5 mm) in 48 inches (1.2 m).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Clean and strip galvanized items where site welding is required.

3.3 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized. Paint all field welds and any damage to galvanized finish with zinc rich primer and galvanized repair paint Sherwin Williams Zinc-Clad V or approved equal

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).
- C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

**SECTION 05 5213
PIPE AND TUBE RAILINGS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Wall mounted handrails.
- B. Stair railings and guardrails.
- C. Free-standing railings at steps and reamps.

1.2 RELATED REQUIREMENTS

- A. Section 09 9113 - Exterior Painting: Paint finish., where noted.

1.3 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- C. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- D. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013.
- E. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- F. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

1.5 QUALITY ASSURANCE

- A. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.
- B. Fabricator Qualifications:
 - 1. A company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

PART 2 PRODUCTS

2.1 RAILINGS - GENERAL REQUIREMENTS

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot (1095 N/m) applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- C. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds (890 N) applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- D. Allow for expansion and contraction of members and building movement without damage to connections or members.

- E. Dimensions: See drawings for configurations and heights.
 - 1. Top Rails and Wall Rails: 1-1/2 inches (38 mm) diameter, round.
 - 2. Posts: 1-1/2 inches (38 mm) diameter, round.
- F. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
- G. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.2 STEEL RAILING SYSTEM

- A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
- B. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
- C. Exposed Fasteners: No exposed bolts or screws.
- D. Straight Splice Connectors: Steel concealed spigots.
- E. Galvanizing: In accordance with requirements of ASTM A123/A123M.
 - 1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic. Sherwin Williams Zinc-Clad V or approved equal

2.3 FABRICATION

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Welded Joints:
 - 1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
 - 2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

2.4 FINISHES - STEEL

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Galvanizing Steel Members: Galvanize all exterior components after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating. (Provide minimum 530 g/sq m galvanized coating.)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.2 PREPARATION

- A. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.3 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- B. Install railings in compliance with ADA Standards for accessible design at applicable locations.

- C. Field weld anchors as indicated on shop drawings. Grind welds smooth. Coat all field welds or damaged galvanized finish with zinc-rich coating as specified
- D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6 mm) per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch (6 mm).
- C. Maximum Out-of-Position: 1/4 inch (6 mm).

END OF SECTION

SECTION 05 5305
METAL GRATINGS AND FLOOR PLATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Formed metal floor and stair tread gratings.
- B. Flat surface floor and stair tread plating.

1.2 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications.

1.3 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- D. ASTM A786/A786M - Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates; 2015.
- E. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide span and deflection tables.
- C. Shop Drawings: Indicate details of component supports, openings, perimeter construction details, and tolerances.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. CMW-4-125-Close Mesh; McNichols .

2.2 PERFORMANCE REQUIREMENTS

- A. Comply with applicable code for loading requirements.
- B. Design Live (Pedestrian) Load: Uniform load of 100 lb/sq ft (4.7 kPa) minimum; concentrated load of 300 lbs (1330 N).
- C. Maximum Allowable Deflection Under Live Load: 1/240 of span; size components by single support design.
- D. ADA Compliant.

2.3 MATERIALS

- A. Steel Floor Plate: ASTM A786/A786M; manufacturer's standard pattern.
- B. Steel For Welding or Riveting: ASTM A36/A36M, galvanized, of shapes indicated.
- C. Cross Bars: ASTM B211/B211M solid bars.

2.4 ACCESSORIES

- A. Fasteners and Saddle Clips: Galvanized steel:

2.5 FABRICATION

- A. Fabricate grates and plates to accommodate design loads.

- B. Weld joints of intersecting metal sections.
- C. Top Surface: Serrated.
- D. Bearing Bar: 1 1/4 by 3/16 inch (36 by 7 mm) size, spaced 11/16 inches (20 mm) on center.

2.6 FINISHES

- A. Galvanized: Hot dipped galvanized after fabrication in accordance with: ASTM A123/A123M.
- B. Galvanizing for Steel Hardware: ASTM A153/A153M.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that opening sizes and dimensional tolerances are acceptable.
- B. Verify that supports are correctly positioned.

3.2 INSTALLATION

- A. Install components in accordance with manufacturer's instructions.
- B. Place frames in correct position, plumb and level.
- C. Mechanically cut galvanized finish surfaces. Do not flame cut.
- D. Anchor by bolting through saddle clips.
- E. Secure to prevent movement.

3.3 TOLERANCES

- A. Maximum Space Between Adjacent Sections: 1/4 inch (6 mm).
- B. Maximum Variation From Top Surface Plane of Adjacent Sections: ____ inch (____ mm)

SECTION 07 5010
MODIFICATIONS TO EXISTING ROOFING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Modification to existing EPDM membrane roofing system.
- B. Remove all existing roofing and flashings as required to provide new openings for steel components as shown on drawings.
- C. Disposal of removal and construction waste is the responsibility of General Contractor. Perform disposal in manner complying with all applicable federal, state, and local regulations.

1.3 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications. Roofing modifications required by miscellaneous roof supports.

1.4 REFERENCE STANDARDS

- A. ASTM D1079 - Standard Terminology Relating to Roofing and Waterproofing; 2016.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference: Before start of roofing work, General Construction Contractor shall hold a meeting to discuss the proper installation of materials, status of the existing warranty, requirements to maintain the existing warranty, and manufacturer's approval of the installer and requirements to maintain the existing warranty..
 - 1. Require attendance with all parties directly influencing the quality of roofing work or affected by the performance of roofing work.
 - 2. Notify Architect or Construction Manager well in advance of meeting.

1.6 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Provide manufacturer's printed data sufficient to show that all components of roofing systems, including insulation and fasteners, comply with the specified requirements and with the roofing manufacturer's requirements and recommendations for the system type specified; include at least the following:
 - a. Technical data sheet for roof membrane.
 - b. Technical data sheets for splice tape and adhesives.
 - c. Technical data sheet for each insulation type.
 - d. Technical data sheet for pavers.
 - 2. Installation Instructions: Provide manufacturer's instructions to installer, marked up to show exactly how all components will be installed; where instructions allow installation options, clearly indicate which option will be used.
 - 3. Pre-Work Site and Building Inspection Report with photos to documents conditions before commencing work.
 - 4. Written certification from the manufacturer which states that the installer is acceptable or licensed to install the specified roofing; if not previously provided.
- C. Installer Qualifications: Letter from manufacturer attesting that the roofing installer meets the specified qualifications for all systems under warranty.

1.7 CODE APPROVAL REQUIREMENTS

- A. Install roofing and insulation system components to meet the following minimum requirements:
 - 1. New York State Uniform Fire Prevention and Building Code, which includes by reference the New York State Energy Conservation Code.
 - 2. Underwriters Laboratories Inc. Class A External Fire Rating for roof assemblies tested in accordance with ASTM E 108 or UL 790.
 - 3. Underwriters Laboratories Inc. Standard 1256 for roof assemblies with foam insulation.
- B. Provide written certification from the roof material Manufacturer, before beginning work, to confirm the roofing system meets these requirements.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Roofing installer shall have the following:
 - 1. A firm (Installer) with not less than 5 continuous years experience performing EPDM roofing work similar to that required for this project, employing personnel skilled in the specified work.
 - a. The Installer shall directly employ the personnel performing the work of this section.
 - b. The Installer shall have a full time supervisor/foreman on the roof when roofing work is in progress. The Supervisor shall have a minimum of 5 years experience in roofing work similar in nature and scope to this project, and speak fluent English.
 - c. The Installer shall provide a reference list of at least three projects of comparable size and similar design, within a fifty mile radius of this project, which may be observed by representatives of the Owner:
 - a) The reference list shall include at a minimum, the completion date, a description of the work performed, the Owner's name - contact person - phone number and address and the Architect's name - contact person and phone number.
 - b) The Installer shall provide the reference list prior to contract award if requested.
 - d. The Installer shall be acceptable to or licensed by the Manufacturer of the primary roofing materials, and provide written certification from the Manufacturer to confirm this prior to award if requested.

1.9 JOB CONDITIONS (CAUTIONS & WARNINGS)

- A. Do not use oil base or plastic roof cement with EPDM roofing. Do not allow waste products, (petroleum grease or oil, solvents, vegetable or mineral oil, animal fat) or direct steam venting to come in contact with any roofing, insulation or flashing product. Do not expose EPDM roofing and accessories to a temperature in excess of 175 degrees Fahrenheit.
- B. Splice cleaner, primer, cements and bonding adhesives are flammable. Do not breathe vapors or use near fire or flame or in a confined or unventilated area. Dispense only from a UL listed or approved safety can.
- C. Remove empty adhesive and solvent containers and contaminated rags from the roof and legally dispose of them daily.
- D. Do not apply adhesives adjacent to open ventilation system louvers, or windows. Temporarily cover the louvers and windows with 6 mil fire retardant polyethylene and prevent adhesive odors from entering the building. Remove temporary covers at the end of each days work.

1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver material to the site in the Manufacturer's original and unopened packaging, bearing labels which identify the type and names of the products and Manufacturers, with the labels intact and legible.
- B. Cover all stored materials, except rolls of EPDM and sealed cans of adhesives, with watertight tarpaulins installed immediately upon delivery.
- C. Immediately remove any insulation which gets wet from the job site.

- D. Do not overload the structure when storing materials on the roof.
- E. Store and install all material within the Manufacturer's recommended temperature range.

1.11 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Existing Roof System Under Warranty
 - 1. The existing roofing system is under warranty and the General Construction Contractor or their subcontractor must notify and be authorized by the manufacturer to perform all work as per the manufacturer's instruction.
 - a. Manufacture's Warranty: Certification from manufacturer that the existing warranty covering membrane, roof insulation, and other indicated components of the system, shall remain the new and existing terms of the original warranty.
 - 2. Comply with all warranty procedures required by manufacturer, including notifications
 Manufacture's Warranty: Certification from manufacturer that the existing warranty covering membrane, roof insulation, and other indicated components of the system, shall remain the new and existing terms of the original warranty, scheduling, and inspections:
 - 3. Manufacture's Warranty: Certification from manufacturer that the existing warranty covering membrane, roof insulation, and other indicated components of the system, shall remain the new and existing terms of the original warranty Contractors warranty.
 - 4. Manufacturer's and Contractor's Guarantees/Warranties shall be issued no more than 30 days before the satisfactory completion of punch list work.

PART 2 PRODUCTS

2.1 GENERAL

- A. Acceptable Manufacturer - Roofing System: Match existing manufacturers roofing system.
 - 1. Roofing systems by other manufacturers are not acceptable if existing roof is under warranty.
- B. Substitutions: See Section 01 2500 - Substitution Procedures

2.2 EPDM ROOFING

- A. Unreinforced 60 mils thick, fire retardant, EPDM (Ethylene Propylene Diene Monomer) sheet membrane conforming to the following minimum physical properties.

1. PROPERTY	TEST METHOD	SPECIFICATION
2. Color-		Gray/Black
3. Elongation	ASTM D-412	300% min
4. Tear Strength	ASTM D-624	150 lb/in min
5. Ozone Resistance days/100 strain	ASTM D-1149	No cracks, 7 pphm/100°F/50%
6. Heat Aging	ASTM D-573	1200 psi min@ 200% elongation/4 wks/240°F
7. Brittleness Temperature	ASTM D-746	-49°F
8. Water Vapor Permanence	ASTM E-96	2.0 perm max
9. Thickness	ASTM D-412	60 mils plus/minus 6 mils
10. Fire Retardant		UL Class A
- B. Related Materials:
 - 1. Cleaners, adhesives, sealants, caulking and fasteners furnished by the EPDM system Manufacturer. Use low VOC adhesives and cleaners to comply with regulations in effect at the time of application.

- a. Stripping: 90 mil thick 5 inch and 9 inch wide self adhering flashing, consisting of 45 mils of semi-cured EPDM factory laminated to 45 mils of cured seaming tape.
 - b. Bonding Adhesive: High strength contact adhesive.
 - c. Splice Adhesive: High strength synthetic polymer based contact cement formulated specifically to splice EPDM sheets.
 - d. Lap Sealant: EPDM rubber based gun grade sealant.
 - e. Water Block Seal: One component low viscosity butyl rubber sealant.
 - f. Pre-Molded Pipe Flashing: Pressure sensitive prefabricated flashings with pre-applied adhesive.
 - g. Pourable Sealer: Two component, solvent free polyurethane based sealant.
 - h. Reinforced Perimeter Fastening Strips: .030 inch thick reinforced cured EPDM.
 - i. Seam Tape Primer: Synthetic rubber polymer based primer designed to clean and prime seam tape splice areas prior to installing the tape.
 - j. Seam Splice Tape: Nominal 30 mil thick cured polymer self adhesive tape with release paper carrier, 6 inches wide.
 - k. Plates and Bars: Galvanized and corrosion resistant specialty products.
 - l. Fasteners: #14 Fluorocarbon polymer coated heavy duty screws.
- C. Gypsum Cover Board: 1/4 inch thick fire resistant gypsum board decking with inorganic glass mat facers and a water resistant core, formulated in 48 x 48 inch square edge boards, UL Class A, meeting ASTM C-1177, manufactured under the trade name Dens-Deck Prime

2.3 INSULATION:

- A. Isocyanurate - Tapered rigid cellular polyisocyanurate boards with fibrous felt/fiberglass mat facers, sloping 1/2 inch per foot, minimum starting thickness 1-1/2 inches, minimum compressive strength 20 psi, meeting ASTM C1289-01, Type II, Class1, Grade 2.
1. Tapered insulation sloping 1/4 inch per foot, minimum starting thickness as shown on the roof plan.
 2. Crickets sloping 1/4 inch per foot.
 3. At repairs to existing building match thickness of existing insulation.
 4. Product: Firestone "ISO 95+ Isocyanurate Insulation" or approved equal.

2.4 ACCESSORY MATERIALS

- A. Wood Nailers: PS 20 dimension lumber, Structural Grade No. 2 or better Southern Pine, Douglas Fir; or PS 1 <http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=APA PS 1>, APA Exterior Grade plywood.
1. Thickness: Same as thickness of roof insulation.
- B. Cant Strips and Tapered Edge Strips: 45 degree face slope and minimum 5 inch (127 mm) face dimension; provide at all angle changes between vertical and horizontal planes that exceed 45 degrees.

PART 3 INSTALLATION

3.1 GENERAL

- A. Construct the new roofing system in a watertight, workmanlike manner, meeting the guarantee requirements specified herein; in strict accordance with the drawings and in conformance with the Manufacturer's requirements, except as enhanced in this specification.
- B. Perform work at areas with roof mounted mechanical equipment, so the work coincides with equipment shutdown periods and does not affect building occupants. Temporarily cover and protect equipment openings, and windows adjoining the work area, with 6 mil fire retardant polyethylene, so dirt, dust and odors do not enter the equipment or building. Remove covers at the end of each workday, and as soon as roof work is complete.

- C. Clean the surface on which roofing system components will be applied, of all laitance, dirt, oil, grease or other foreign matter which would in any way affect the quality of the installation.
- D. Install roof system components on dry surfaces only. Do not install any items when weather conditions and outside temperatures are not suitable in accordance with the Manufacturer's recommendations.
- E. Complete all work in sequence as quickly as possible so that as small an area as practicable is in the process of construction at any one time. Complete the entire area of work begun each day, the same day, and make all exposed edges watertight at the end of each day's work.

3.2 PREPARATION

- A. Remove existing roof system down to the roof deck in areas required to perform new work, including all existing composition base flashings. Dispose of all materials properly.
- B. Take appropriate measures to ensure that fumes from adhesive solvents are not drawn into the building through air intakes.
- C. Fill all surface voids in the immediate substrate that are greater than 1/4 inch (6 mm) wide with fill material acceptable insulation to membrane manufacturer.

3.3 SINGLE-PLY MEMBRANE INSTALLATION

- A. Beginning at low point of roof, place membrane without stretching over substrate and allow to relax at least 30 minutes before attachment or splicing; in colder weather allow for longer relax time.
- B. Lay out the membrane pieces so that field and flashing splices are installed to shed water.
- C. Install membrane without wrinkles and without gaps or fishmouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.
- D. Fully adhere EPDM to the substrate with bonding adhesive, on all roof areas except the terrace courtyard.
 - 1. Allow contact bonding adhesive to dry to the touch before joining the EPDM to the substrate. Roll the EPDM onto the bonding adhesive and immediately rub it vigorously with a soft bristle broom to ensure complete adhesion.
 - 2. Do not punch holes in cans of adhesive and use them in a "Better Spreader" without first opening the cans to mix them.
 - 3. Replace used roller covers each day; discard covers after each day's use.
 - 4. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.
 - 5. Allow bonding adhesive to dry to the touch before joining the EPDM to the substrate.
- E. Roofing installed over improperly applied adhesive or with adhesive that wasn't stirred, and roofing installed with blisters, ridges, mole runs and similar deficiencies shall be removed and replaced at the Contractor's expense
- F. Mechanical Attachment: Install fasteners in the seams, covered by membrane.
 - 1. Lay out fasteners in compliance with FM Class specified in PART 2, as recommended by membrane manufacturer, and as indicated, whichever is most stringent.
 - 2. Properly engage fasteners in the deck with head flush with the countersunk portion of seam plate.
- G. Edge Securement: Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2 in 12 inches (1:6) using mechanically fastened reinforced perimeter fastening strips, plates, or metal edging as indicated or as recommended by roofing manufacturer.
 - 1. Exceptions: Round pipe penetrations less than 18 inches (460 mm) in diameter and square penetrations less than 4 inches (200 mm) square.
 - 2. Metal edging is not merely decorative; ensure anchorage of membrane as intended by roofing manufacturer.

3.4 FLASHING AND ACCESSORIES INSTALLATION

- A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.
- B. Flashing at Penetrations: Flash all penetrations passing through the membrane; make flashing seals directly to the penetration.

3.5 FIELD QUALITY CONTROL

- A. Inspection by Manufacturer: Provide final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer specifically to inspect installation for warranty purposes (i.e. not a sales person).
- B. Perform all corrections necessary for issuance of warranty.

3.6 CLEANING

- A. Clean all contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
- B. Repair or replace building components and finished surfaces damaged or defaced due to the work of this section; comply with recommendations of manufacturers of components and surfaces.
- C. Remove leftover materials, trash, debris, equipment from project site and surrounding areas.

3.7 PROTECTION

- A. Where construction traffic must continue over finished roof membrane, provide durable protection and replace or repair damaged roofing to original condition.

END OF SECTION

SECTION 07 9005
JOINT SEALERS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sealants and joint backing.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.3 REFERENCE STANDARDS

- A. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- C. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- D. ASTM D1667 - Standard Specification for Flexible Cellular Materials--Poly(Vinyl Chloride) Foam (Closed-Cell); 2005 (Reapproved 2011).

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the work with other sections referencing this section.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.7 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

PART 2 PRODUCTS

2.1 SEALANTS

- A. Sealants and Primers - General: Provide products having volatile organic compound (VOC) content as specified in Section 01 6116.
- B. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25 minimum; Uses M, G, and A; single component.
 - 1. Color: Match adjacent finished surfaces.
 - 2. Applications: Use for:
 - a. Control, expansion, and soft joints in masonry.
 - b. Joints between metal frames and other materials.
 - c. Other exterior joints for which no other sealant is indicated.
 - 3. Polyurethane Products:
 - a. Pecora Corporation; DynaTrol I-XL General Purpose One Part Polyurethane Sealant: www.pecora.com.
 - b. Sika Corporation; Sikaflex-1a: www.usa-sika.com.
- C. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.
 - 1. Color: Match adjacent finished surfaces.

2. Applications: Use for:
 - a. Interior wall and ceiling control joints.
 - b. Joints between door and window frames and wall surfaces.
 - c. Other interior joints for which no other type of sealant is indicated.
3. Products:
 - a. Pecora Corporation; AC-20 + Silicone Acrylic Latex Caulking Compound: www.pecora.com.
- D. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Class 25 minimum; Uses T, I, M, A, O; single component, chemical curing, non staining, non bleeding, capable of continuous water immersion, self-leveling type.
 1. Color: Gray.
 2. Movement Capability: Plus and minus 25 percent.
 3. Applications: Use for:
 - a. Perimeter and Expansion joints in sidewalks and ramps.
 4. Products:
 - a. Pecora Corporation; NR-201 Self-Leveling Traffic and Loop Sealant: www.pecora.com.
 - b. Sika Corporation; Sikaflex-1c SL: www.usa-sika.com.

2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Backing: Round foam rod compatible with sealant; ASTM D1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- C. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

3.3 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Install bond breaker where joint backing is not used.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Tool joints concave.

3.4 CLEANING

- A. Clean adjacent soiled surfaces.

3.5 PROTECTION

- A. Protect sealants until cured.

END OF SECTION

SECTION 08 1613
FIBERGLASS DOORS AND ALUMINUM FRAMES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SECTION INCLUDES

- A. Fiberglass reinforced polyester (FRP) doors.
- B. Snap trim.
- C. Aluminum Frames for fiberglass reinforced polyester doors.
- D. Accessories.

1.3 RELATED REQUIREMENTS

- A. Section 08 7100 - Door Hardware: Other door hardware.

1.4 REFERENCE STANDARDS

- A. ASTM B 209 - Aluminum and Aluminum-Alloy Sheet and Plate.
- B. ASTM B 221 - Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- C. ASTM D 543 - Evaluating the Resistance of Plastics to Chemical Reagents
- D. ASTM D 570 - Water Absorption of Plastics
- E. ASTM D 638 - Tensile Properties of Plastics
- F. ASTM D 790 - Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- G. ASTM D 1621 - Compressive Properties of Rigid Cellular Plastics
- H. ASTM D 1623 - Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics
- I. ASTM D 2126 - Response of Rigid Cellular Plastics to Thermal and Humid Aging
- J. ASTM D 2583 - Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
- K. ASTM D 5420 - Impact Resistance of Flat Rigid Plastic Specimens by Means of a Falling Weight.
- L. ASTM D 6670-01 - Standard Practice for Full-Scale Chamber Determination of Volatile Organic Emissions from Indoor Materials/Products
- M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- N. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007.
- O. ASTM E 90 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
- P. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- Q. ASTM E 283 - Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
- R. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
- S. ASTM E 331 - Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- T. ASTM F 476 - Security of Swinging Door Assemblies.
- U. ASTM F 1642-04 - Standard Test Method for Glazing Systems Subject to Air blast Loading.

- V. NWWDA T.M. 7-90 - Cycle Slam Test Method
- W. SFBC PA 201 - Impact Test Procedures.
- X. SFBC PA 203 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.
- Y. SFBC 3603.2 (b)(5) - Forced Entry Resistance Test.
- Z. UL 10C - Positive Pressure Fire Tests of Door Assemblies

1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.
- B. Air Infiltration: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 283 at pressure differential of 6.27 psf. Door shall not exceed 0.58 cfm/ft².
- C. Water Resistance: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 331 at pressure differential of 7.50 psf. Door shall not have water leakage.
- D. Indoor air quality testing per ASTM D 6670-01: GREENGUARD Environmental Institute Certified including GREENGUARD for Children and Schools Certification.
- E. Hurricane Test Standards, Single Door:
 - 1. Uniform Static Load, ASTM E 330: Plus or minus 195 pounds per square foot.
 - 2. Forced Entry Test, 300 Pound Load Applied, SFBC 3603.2 (b)(5): Passed.
 - 3. Cyclic Load Test, SFBC PA 203: Plus or minus 53 pounds per square foot.
 - 4. Large Missile Impact Test, SFBC PA 201: Passed.
- F. Hurricane Test Standards, Pair of Doors with single point latching:
 - 1. Uniform Static Load, ASTM E 330: Plus or minus 112.5 pounds per square foot.
 - 2. Forced Entry Test, 300 Pound Load Applied, AAMA 1304: Passed.
 - 3. Cyclic Load Test, ASTM E 1886: Plus or minus 75 pounds per square foot.
 - 4. Large Missile Impact Test, ASTM E 1886: Passed.
- G. Swinging Door Cycle Test, Doors and Frames, ANSI A250.4: Minimum of 25,000,000 cycles.
- H. Cycle Slam Test Method, NWWDA T.M. 7-90: Minimum 5,000,000 Cycles.
- I. Salt Spray, Exterior Doors and Frames, ASTM B 117: Minimum of 500 hours.
- J. Sound Transmission, Exterior Doors, STC, ASTM E 90: Minimum of 25.
- K. Thermal Transmission, Exterior Doors, U-Value, AAMA 1503-98: Maximum of 0.29 BTU/hr x sf x degrees F. Minimum of 55 CRF value.
- L. Impact Strength, FRP Doors and Panels, Nominal Value, ASTM D 256: 14.0 foot-pounds per inch of notch.
- M. Tensile Strength, FRP Doors and Panels, Nominal Value, ASTM D 638: 13,000 psi.
- N. Flexural Strength, FRP Doors and Panels, Nominal Value, ASTM D 790: 21,000 psi.
- O. Water Absorption, FRP Doors and Panels, Nominal Value, ASTM D 570: 0.20 percent after 24 hours.
- P. S. Indentation Hardness, FRP Doors and Panels, Nominal Value, ASTM D 2583: 55.
- Q. T. Gardner Impact Strength, FRP Doors and Panels, Nominal Value, ASTM D 5420: 120 in-lb.
- R. Abrasion Resistance, Face Sheet, Taber Abrasion Test, 25 Cycles at 1,000 Gram Weight with CS-17 Wheel: Maximum of 0.029 average weight loss percentage.
- S. Stain Resistance, ASTM D 1308: Face sheet unaffected after exposure to red cabbage, tea, and tomato acid. Stain removed easily with mild abrasive or FRP cleaner when exposed to crayon and crankcase oil.
- T. Chemical Resistance, ASTM D 543. Excellent rating.

1. Acetic acid, Concentrated.
 2. Ammonium Hydroxide, Concentrated.
 3. Citric Acid, 10%.
 4. Formaldehyde.
 5. Hydrochloric Acid, 10%
 6. Sodium hypochlorite, 4 to 6 percent solution.
- U. Compressive Strength, Foam Core, Nominal Value, ASTM D 1621: 79.9 psi.
- V. Compressive Modulus, Foam Core, Nominal Value, ASTM D 1621: 370 psi.
- W. Tensile Adhesion, Foam Core, Nominal Value, ASTM D 1623: 45.3 psi.
- X. Thermal and Humid Aging, Foam Core, Nominal Value, 158 Degrees F and 100 Percent Humidity for 14 Days, ASTM D 2126: Minus 5.14 percent volume change.
- Y. Doors shall comply with fire resistance and flammability regulations as interpreted by governing authorities, and as follows:
1. Face sheets tested in accordance with ASTM E84 shall have the following ratings:
 - a. Smoke Developed:
 - a) Not greater than 320 Interior Skins (Class A).
 - b) Not greater than 345 Exterior Skins (Class C)
 - b. Flame Spread:
 - a) Not greater than 10 Interior Skins (Class A)
 - b) Not greater than 70 Exterior Skins (Class C)

1.6 SYSTEM PERFORMANCE:

- A. Provide Door assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below, as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.
- B. Thermal Transmission (Exterior Doors): U-value of not more than 0.09 (BTU/Hr. x sf x degrees F.) per AAMA 1503.1.
- C. Ignition Barrier: Doors not requiring a fire resistance rating shall comply with the requirements of 2020 Building Code of New York State Section 2603.4.1.7. Foam plastic insulation shall have a flame spread index of 75 or less and a smoke-developed index of not more than 450. Door facings shall have a minimum thickness of 0.032" (0.8mm) aluminum sheet or steel having a base metal thickness of not less than 0.016" (0.4mm) at any point. Manufacturer may alternatively submit an evaluation and testing report from an acceptable agency, confirming testing, accordance with 2603.9, has been completed indicating compliance.

1.7 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Obtain hardware templates from hardware manufacturer prior to starting fabrication.

1.8 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard details, installation instructions, and hardware and anchor recommendations.
- C. Test Reports: Show compliance with specified criteria.
- D. Shop Drawings: Show layout and profiles; include assembly methods. Shop drawings to be prepared by door manufacturer.
 1. Indicate product components, including hardware reinforcement locations and preparations, accessories, finish colors, patterns, and textures.

2. Indicate wall conditions, door and frame elevations, at 1/2" scale, half-sized detail sections, materials, gages, finishes, location of door hardware by dimension, and details of openings; use same reference numbers indicated on Drawings to identify details and openings. expansion provisions, and other components not included in the manufacturer's standard data. Include glazing details
- E. Selection Samples: Submit two complete sets of color chips, illustrating manufacturer's available finishes, colors, and textures.
 1. Where normal color and texture variations are expected, include two or more units in each sample to show the range of such variations.
- F. Architect reserves the right to require samples of typical fabricated section, showing joints, exposed fastenings (if any), quality of workmanship, hardware and accessory items, before fabrication of the work proceeds.
- G. Door Corner Sample: Submit corner cross sections, 10 inch (254 mm) by 10 inch (254 mm) in size, illustrating construction, finish, color, and texture.
- H. Maintenance Data: Include instructions for repair of minor scratches and damage.
- I. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Yonkers Public Schools's name and registered with manufacturer; include detailed terms of warranty.
- J. Maintenance Materials: Furnish the following for Yonkers Public Schools's use in maintenance of project.
 1. See Section 01 6000 - Product Requirements, for additional provisions.

1.9 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than 20 years of documented experience.
 1. Door and frame components from same manufacturer.
 2. Evidence of a compliant documented quality management system.
- B. Standards: Comply with the requirements and recommendations in applicable specifications and standards by NAAMM, AAMA, and AA, including the terminology definitions, and specifically including the "Entrance Manual" by NAAMM, except to the extent more stringent requirements are indicated.
- C. All materials, equipment and operation supplied shall conform to all Code requirements including Accessibility for the Handicapped.
- D. Installer Qualifications: Company specializing in installing products of the type specified in this section with not less than five (5) years of documented experience, and approved by the manufacturer..
- E. The manufacturer shall provide a factory trained technician to visit this project and instruct the installers in the proper installation of the door and frame assemblies.

1.10 FIELD MEASUREMENT:

- A. Verify field measurements prior to fabrication of doors and frames to insure proper fitting of assemblies. Successful bidders are expected to field verify all dimensions, sizes, quantities and the material required to complete this project. Failure to do so will not relieve the successful contractor from the necessity of furnishing any and all materials that may be required, without any additional costs to the Owner.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Mark doors with location of installation, door type, color, and weight.
- B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Materials shall be inspected for damage, and the manufacturer shall be advised immediately of any discrepancies. Unsatisfactory materials are not to be used

- C. Store materials in original corrugated packaging, under cover, protected from exposure to harmful weather conditions and from direct contact with water.
 - 1. Doors shall be "floated" within cartons, with no portion of the door having contact with the outer shell of the container.
 - 2. Store at temperature and humidity conditions recommended by manufacturer.
 - 3. Do not use non-vented plastic or canvas shelters.
 - 4. Immediately remove wet wrappers.
 - 5. Store in position recommended by manufacturer, elevated minimum 4 inches (102 mm) above grade, with minimum 1/4 inches (6 mm) space between doors.

1.12 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

1.13 SPECIAL PROJECT WARRANTY:

- A. Provide a written warranty signed by Manufacturer, Installer and Contractor, agreeing to replace, at no cost to the Owner, any doors or frames that fail in materials or workmanship, within the time period of acceptance, as indicated below. Failure of materials or workmanship includes excessive deflection, faulty operation of entrances, deterioration of finish, or construction, in excess of normal weathering, and defects in hardware, weather stripping, and other components of the work. In addition the manufacturer further certifies that they have factory installed all hardware and such hardware is also guaranteed not to come loose during the guarantee period.
- B. Warranty Time Period: Ten Years from substantial completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. Reinforced Fiberglass Doors (FRP)
 - a. Special-Lite, Inc. Decatur, Michigan or approved equal by
 - b. FRP Architectural Doors, Inc., Bensalam, PA.

2.2 ALUMINUM DOOR FRAMES

- A. Materials and Accessories
 - 1. Aluminum Members: Provide alloy and temper as recommended by manufacturer for strength, corrosion resistance, and application of required finish and control of color; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate, with a minimum wall thickness of 0.125".
 - 2. All materials shall be of the same manufacturer. No splitting of Door and Frame components will be permitted for aluminum frames.
 - 3. Fasteners: Provide Aluminum, non-magnetic stainless steel or other non-corrosive metal fasteners, guaranteed by the manufacturer to be compatible with the doors, frames, stops, panels, hardware, anchors, and other items being fastened. For exposed fasteners (if any), provide Phillips head flat head screws with finish matching the item to be fastened.
 - 4. Do not use exposed fasteners, except where unavoidable for the assembly of units, or unavoidable for the fastening of hardware. Provide only concealed screws in glazing stops.
 - 5. Reinforcement and Brackets: Manufacturer's standard formed or fabricated steel units, of shapes, plates, of bars, with 2.0 ounce hot-dip zinc coating, complying with ASTM A 123, applied after fabrication.
 - 6. Expansion Anchor Devices: Lead shield or toothed steel, drilling expansion bolt anchors.
 - 7. Bituminous Coating: Cold applied asphalt mastic complying with SSPC-PS 12, compounded for 30-mil thickness per coat.

8. Sealants and Gaskets: Provide sealants and gaskets in the fabrication, assembly and installation of the work, which are recommended by the manufacturer to remain permanently elastic, non-shrinking, non-migrating and weatherproof.
- B. Door Perimeter Framing
1. Tubular Framing:
 - a. Heavy Wall Tube Aluminum Framing with Applied Door & Glass Stops. Size and Type: Model: SL-600 TB
 - b. Material: Aluminum Alloy 6063-T5, 0.125-inch minimum wall thickness tube.
 - c. Perimeter Frame Members:
 - a) Thermally-broken Box type with 4 enclosed sides.
 - b) Size: 2" x 6".
 - c) Factory fabricated.
 - d) Open-back framing is not acceptable.
 - e) Applied Door Stops:
 - f) 0.625-inch high, with screws and weatherstripping.
 - g) Pressure gasketing for weathering seal.
 - h) Counterpunch fastener holes in door stop to preserve full-metal thickness under fastener head.
 - d. Caulking: Caulk joints before assembling frame members.
 - e. Joints:
 - a) Secure joints with fasteners.
 - b) Provide hairline butt joint appearance.
 - f. Hardware:
 - a) Premachine and reinforce frame members for hardware in accordance with manufacturer's standards and door hardware schedule.
 - b) Factory install door hardware.
 - g. Anchors:
 - a) Anchors appropriate for wall conditions to anchor framing to wall materials.
 - b) Door Jamb and Header Mounting Holes: Maximum of 24-inch centers.
 - c) Secure head and sill members of transom, side lites, and similar conditions.

2.3 FIBERGLASS REINFORCED POLYESTER (FRP) DOORS:

- A. Doors are to be constructed as follows:
 1. Model S-17, 1 3/4" thick.
 2. Constructed of aluminum alloy rails and stiles, joined with steel tie rods.
 3. Stiles to be tubular shape to accept hardware as specified.
 4. Top and bottom rails to be extruded with legs for interlocking "rigidity weather bar."
 5. Joinery to be 3/8" tie rods, top and bottom, bolted through an extruded spline and 3/16" riveted reinforcing angles, and secured with aircraft type nuts. Doors with mid-panels are to have an additional tie rod at the mid-panel.
- B. All doors shall be pre-machined in accordance with templates from the hardware manufacturer. For surface applied hardware doors shall have necessary reinforcement, including the attachment of RIVNUT blind bolt fasteners. With the exception of door closures and holders, which require field applications, doors are to be shipped with hardware attached.
- C. Face sheets to be locked in with extruded interlocking edges. (No Snap-On trim will be accepted.)
- D. Core is to be of Urethane foam of 5 lb. per cubic foot density. All doors are to be properly reinforced for hardware prior to Urethane core foaming in door.

- E. Face sheets for FRP Doors are to be .120" thick with Pebble finish, sandstone finish for main entrance doors.
 - 1. Class A for all interior doors and interior face of exterior doors.
- F. Color as selected by the Architect from Manufactures Standard or Classic Colors. Interior and exterior colors may be different.

2.4 FINISH HARDWARE:

- A. Provide and factory install finish hardware for each door leaf as specified in Division 8 "Finish Hardware" and as listed below.
- B. SL-88, 10-7/8" high, 5-3/4" wide, 1-3/8" recess and 1-1/2" bottom opening for aluminum doors.
- C. SL-301 Concealed adjustable brush. Install door manufacturer's multi-directional adjustable bottom with double nylon brush weatherstripping. Door bottom must be concealed and adjust to accommodate irregular tapered floor conditions.
- D. Receive Hardware supplied in accordance with this Section, and coordinate with additional Hardware requirements of section 08 7100 - Door Hardware. Report discrepancies (in writing) to the Architect immediately.
- E. Reinforce, cut, drill and tap doors and frames as required to receive Hardware, except do not drill and tap for surface mounted closers and holders, which will be applied at the jobsite. Comply with Hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.
- F. Install all Hardware, except surface mounted closers and holders, at the fabrication plant. Remove only Hardware as required for final finishing or delivery to jobsite. Package and identify such Hardware and ship with doors and frames for installation at the project site.
- G. Painting: All existing surfaces to remain exposed, and all disturbed areas shall be painted to match existing surfaces.

2.5 FABRICATION:

- A. Sizes and Profiles: The required sizes for door and frame units, and profiles requirements are shown on the drawings.
- B. The details shown are based upon standard details by one or more manufacturers. It is intended that similar details by other manufacturers will be accepted, provided they comply with size requirements, and with minimum/maximum profile requirements as shown.
- C. Co-ordination of Fabrication: Check the actual frame or door openings in the construction work by accurate field measurements before fabrication, and show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress, as directed by Contractor, and avoid delays of the work.
- D. Complete the cutting, fitting, forming, drilling and grinding of all metal work prior to the cleaning, finishing, treatment and application for coatings. Remove burrs from cut edges, and ease edges and corners to a radius of approximately 1/64".
- E. No Welding of joints will be accepted.
- F. Conceal fasteners, wherever possible, except as otherwise noted.
- G. Maintain continuity of line and accurate relation of planes and angles. Provide secure attachments and support at mechanical joints, with hairline fit at contacting members.
- H. Reinforce the work as necessary for performance requirements, and for support to the structure. Separate dissimilar metals with bituminous paint or preformed separators which will prevent corrosion. Separate metal surfaces at moving joints with non-metallic separators to prevent "freeze-up" of joints.

2.6 ACCESSORIES

- A. Foam window and door seal.

1. Fill all exterior joint between windows and doors solid in accordance with manufacture's instructions.
 2. Cut back to permit application of joint sealant.
 3. Insulating-Foam Sealant: Dow Great Stuff Window & Door.
- B. Snap Trim as required. Match door and frame finish.
- C. Glazing:
1. Insulated Laminated Glass Units : Double pane with glass to elastomer edge seal. Comply with SPSC 16 CFR 1201 test requirements for Category II.
 - a. Location: All Glazing within exterior doors.
 - b. Comply with SPSC 16 CFR 1201 test requirements for Category II.
 - c. Outer pane of Laminated-Heat Strengthen, 1/8" glass, 0.060" PVB interlayer, 1/8" glass..
 - d. Inner pane of fully tempered 1/4" glass.
 - e. Place low E coating on #2 surface within the unit.
 - f. Transmittance:
 - a) Visible Light 70%.
 - b) Solar Energy 33%.
 - c) U-V 10%
 - g. Reflectance:
 - a) Visible Light Exterior 11% Visible
 - b) Visible Light Interior 12% Visible
 - c) Solar Energy 31%
 - h. NRFC U-Value:
 - a) Winter 0.29 Btu/hr x sqft x F degrees.
 - b) Summer 0.26 Btu/hr x sqft x F degrees.
 - i. Shading coefficient 0.44
 - j. Relative Heat Gain: 91 Btu/hr x sqft x F degrees
 - k. Solar Factor (SHGC) 0.38
 - l. LSG 1.84
 - m. Durability: Certified by an independent testing agency to comply with ASTM E 2190.
 - n. Purge interpane space with dry hermetic air.
 - o. Total unit thickness of 1" inch (____ mm) minimum.
- D. Lite Kits:
1. Provide and factory install a Special-Lite FL-Series 2 piece extruded aluminum. Size and configuration as detailed.

2.7 FINISHES

- A. High-Performance Organic Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions
1. Fluoropolymer Two-Coat System: Manufacturer's standard two-coat thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 50% polyvinylfluoride resin by weight; complying with AAMA 2604.
 2. Color: Dark Bronze as selected by Architect from manufacturer's standard colors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify actual dimensions of openings by field measurements before door fabrication; show recorded measurements on shop drawings.
- B. Do not begin installation until substrates have been properly prepared.

3.2 PREPARATION

- A. Remove existing doors and frames, and dispose of all removed materials in accordance with local authorities having jurisdiction.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Clean and prepare substrate in accordance with manufacturer's directions.
- D. Protect adjacent work and finish surfaces from damage during installation.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions; do not penetrate frames with anchors.
- B. Install exterior doors in accordance with ASTM E2112.
- C. Set units plumb, level, and true-to-line, without warping or racking doors, and with specified clearances; anchor in place.
- D. Set units plumb, level and true to line, without warp or rack of doors or frames. Anchor securely in place. Separate Aluminum, and other corrodible metal surfaces, from sources of corrosion or electrolytic action at points of contact with other materials, with bituminous coatings, or other means as approved by Architect.
- E. Set saddles in a bed of compound.
- F. Separate aluminum and other metal surfaces from sources of corrosion of electrolytic action at points of contact with other materials.
- G. Repair or replace damaged installed products.

3.4 ADJUSTING

- A. Lubricate, test, and adjust doors to operate easily, free from warp, twist or distortion, and to fit watertight for entire perimeter.
- B. Adjust hardware for smooth and quiet operation.
- C. Adjust doors to fit snugly and close without sticking or binding.

3.5 CLEANING

- A. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.
- B. Do not use harsh cleaning materials or methods that would damage finish.

3.6 PROTECTION

- A. Protect installed products from damage during subsequent work.
- B. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.
- C. Provide protective treatment and other precautions required through the remainder of the construction period, to ensure that the doors and frames will be without damage or deterioration (other than normal weathering) at the time of acceptance.

END OF SECTION

**SECTION 08 7101
DOOR HARDWARE**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
- C. Related Sections:
 - 1. Section 08 81 30 - Aluminum Frames and Aluminum FRP Doors.
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 80 - Fire Doors and Windows.
 - 4. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- 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, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.4 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Related Division 08 Sections (Steel, Aluminum and Wood) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. 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. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Seven years for heavy duty cylindrical (bored) locks and latches.
 - 2. Five years for exit hardware.
 - 3. Ten years for manual door closers.
 - 4. Two years for electromechanical door hardware.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

PART 2 PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
 - 1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
 - 2. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.
 - a. Permanent cylinders, cores, and keys to be installed by Owner.
- B. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Continuous Hinges:
 - 1. For interior or exterior doors up to 450lbs, and 4'-0" wide.
 - a. To be constructed of extruded aluminum 6063-T6 alloy with thermoplastic polyester bearings.
 - b. Shall meet ANSI/BHMA A156.25.

- c. Provide 12-24 x 1/2" steel self tapping screws and #12 x 1 1/2" Flathead Wood Screws, unless otherwise specified.
2. Manufacturer: Markar (MA) 12HD , as specified in hardware sets.

2.3 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
- C. Cylinders: Original manufacturer cylinders complying with the following:
 1. Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
- D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
 1. Interchangeable Cores: Large Format Interchangable Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- E. Keying System: Each type of lock and cylinders to be factory keyed. Conduct specified "Keying Conference" to define and document keying system instructions and requirements. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner. Incorporate decisions made in keying conference, and as follows:
 1. Master Key System: Cylinders are operated by a change key and a master key.
 2. Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
 3. Great-Grand Master Key System: Cylinders are operated by a change key, a master key, a grand master key, and a great-grand master key.
 4. Existing System: Master key or grand master key locks to Owner's existing system.
 5. Keyed Alike: Key all cylinders to same change key.
- F. Construction Keying: Provide construction master keyed cylinders or temporary keyed construction cores where specified. Provide construction master keys in quantity as required by project Contractor. Replace construction cores with permanent cores. Furnish permanent cores for installation as directed under specified "Keying Conference".

2.4 CONVENTIONAL EXIT DEVICES

- A. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlock feature. Provide flush end caps. Cylinder dogging at all exterior doors.
 1. Acceptable Manufacturers:
 - a. Sargent: (SA) - 80 Series.
 - b. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.

2.5 DOOR CLOSERS

- A. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece

cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units and metal covers standard. Install all closers to allow full 180 degree door swing.

1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) – DC6000 Series.
 - b. Norton Door Controls (NO) - 7500 Series.

2.6 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- C. Acceptable Manufacturers:
 1. Pemko Manufacturing (PE).
 2. Reese Enterprises, Inc. (RS).

2.7 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.8 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Antimicrobial Finishes: Where specified, finishes on locksets, latchsets, exit devices and push/pull trim to incorporate an FDA recognized. Silver Ion, antimicrobial coating (MicroShield™) listed for use on equipment as a suppressant to the growth and spread of a broad range of bacteria, algae, fungus, mold and mildew.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 2. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 3. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 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.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- B. Manufacturer's Abbreviations:

1. MK - McKinney
2. RU - Corbin Russwin
3. MC - Medeco
4. RO - Rockwood
5. PE - Pemko
6. MA - Markar
7. IVE - Ives
8. HS - HES

3.9 Hardware Schedule

- A. See Drawings

END OF SECTION

**SECTION 09 9113
EXTERIOR PAINTING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including School Facilities Management Contract Manual and Specifications and Division 1 Specification Sections, apply to this Section.
- B. In the event of discrepancies between the specifications and School Facilities Management Contract Manual and Specifications the School Facilities Management Contract Manual and Specifications shall prevail.

1.2 SECTION INCLUDES

- A. Scope: Preparation and painting of existing and new metal stair and exterior metal components indicated on drawings to be repainted.

1.3 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 05 5000 - Metal Fabrications: Shop-primed items.

1.4 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- C. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com.
- D. SSPC-SP 3 - Power Tool Cleaning; 1982 (Ed. 2004).
- E. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 4. Manufacturer's installation instructions.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures.
- D. Maintenance Materials: Furnish the following for Yonkers Public Schools's use in maintenance of project.
 - 1. See Section 01 6000 - Product Requirements, for additional provisions.
 - 2. Extra Paint and Finish Materials: two (2) gallons (____ L) of each color and surface texture; store where directed.
 - 3. Label each container with color and type in addition to the manufacturer's label.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten (10) years documented experience.

- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five (5) years experience.

1.7 MOCK-UP

- A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.
- B. Provide fence assembly illustrating paint color, texture, and finish.
- C. Locate where directed by Owner's Representative.
- D. Mock-up may remain as part of the work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.9 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer.
- B. Paints:
 - 1. Base Manufacturer: Sherwin-Williams Company; www.sherwin-williams.com.
- C. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
 - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
 - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 3. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Flammability: Comply with applicable code for surface burning characteristics.
- C. Colors: Black.

2.3 PAINT SYSTEMS - EXTERIOR

- A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including previously painted and primed metal.

- B. Ferrous Metals, Previously painted or Unprimed Alkyd: Provide the following finish systems over unprimed or previously painted exterior ferrous metal:
 - 1. Rust inhibiting, modified phenolic alkyd resin and primer: Two finish coats over primer
 - a. Primer: Sherwin Williams Kem Kromik Universal Metal Primer spreading rate recommended by manufacturer to achieve a dry film thickness of 3.3 to 4.4 mils.
 - 2. Topcoat: Two Coats Alkyd applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 3.0 to 5.6 mils
 - a. Sherwin Williams: Direct to Metal Alkyd.
- C. Galvanized and pre finished Metals, Alkyd, 3 Coat:
 - 1. One coat Primer, self cross-linking acrylic primer.
 - a. Sherwin Williams: PRO-CRYL UNIVERSAL PRIMER
 - 2. Two coats of alkyd enamel:
 - a. Finish Coats: Two Coats Waterbased Alkyd Urethane Enamel applied at spreading rate recommended by manufacturer to achieve a dry film thickness of 1.4 to 1.7 per coat.
 - a) Sherwin Williams pro Industrial Alkyd Urethane Enamel

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. Test shop-applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Remove or repair existing paints or finishes that exhibit surface defects.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Oreviously painted and shop primed surfaces:
 - 1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
 - 2. Remove rust, loose mill scale, and other foreign substances by power wire brushing, power sanding, power grinding, power tool chipping and power tool descaling, using methods recommended in writing by paint manufacturer and SSPC-SP 3. Protect from corrosion until coated.
 - 3. Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

- F. Sand metal surfaces lightly between coats to achieve required finish.
- G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

3.4 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

**SECTION 09 9123
INTERIOR PAINTING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Field application of paints.

1.2 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

1.3 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 REFERENCE STANDARDS

- A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.
- B. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
 - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
 - 2. MPI product number (e.g. MPI #47).
 - 3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.8 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:

1. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Primer Sealers: Same manufacturer as top coats.

2.2 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Colors: To be selected from manufacturer's full range of available colors.

1. Match existing adjacent finish colors.

2.3 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including wood.

1. Two top coats and one coat primer.
2. Top Coat Sheen:
 - a. Semi-Gloss: MPI gloss level 5; use this sheen for wall base trim.

B. Paint I-OP-MD-DT - Medium Duty Trim: For surfaces subject to frequent contact by occupants, including metals and wood:

1. Two top coats and one coat primer.
2. Top Coat(s): Interior Light Industrial Coating, Water Based; MPI #151, 153 or 154.
 - a. Products:
 - a) Sherwin-Williams Pro Industrial Acrylic Coating, Semi-Gloss. (MPI #153)

2.4 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. Test shop-applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.

- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Existing Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Prime any new or previously unfinished areas as required. Fill nail holes, damaged sections and cracks after primer has dried; sand between coats. Remove any loose paint or base adhesive residue. Sand surface prior to applying new paint.

3.3 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
- B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- D. Sand wood and metal surfaces lightly between coats to achieve required finish.
- E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 23 2213
STEAM AND CONDENSATE HEATING PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Pipe and pipe fittings.
- B. Pipe hangers and supports.
- C. Steam piping system.
- D. Steam condensate piping system.

1.2 RELATED REQUIREMENTS

- A. Section 09 9123 - Interior Painting.
- B. Section 23 2214 - Steam and Condensate Heating Specialties.

1.3 REFERENCE STANDARDS

- A. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2011.
- B. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2012.
- C. ASME B31.1 - Power Piping; 2014.
- D. ASME B31.9 - Building Services Piping; 2014.
- E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- F. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2015.
- G. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers; 1992 (Reapproved 2014).
- H. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).
- I. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2009.

1.4 SYSTEM DESCRIPTION

- A. When more than one piping system material is selected, ensure systems components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, unions, and couplings for servicing are consistently provided.
- B. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.
- C. Use gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labelling in place. Inspect for damage.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.1 REGULATORY REQUIREMENTS

- A. Comply with ASME B31.9 and ASME B31.1 code for installation of piping system.

2.2 LOW PRESSURE STEAM CONDENSATE PIPING

- A. Steel Pipe: ASTM A53/A53M, Schedule 80, black.
 - 1. Fittings: ASME B16.3 malleable iron Class 150, or ASTM A234/A234M wrought steel.
 - 2. Joints: Threaded, or AWS D1.1/D1.1M welded.

2.3 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 - 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
- B. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch (13 to 38 mm): Malleable iron, adjustable swivel, split ring.
- C. Hangers for Pipe Sizes 2 to 4 Inches (50 to 100 mm): Carbon steel, adjustable, clevis.
- D. Wall Support for Pipe Sizes to 3 Inches (70 mm): Cast iron hook.
- E. Vertical Support: Steel riser clamp.
- F. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify all existing pipe sizes.
- B. Ream pipe and tube ends. Remove burrs.
- C. Remove scale and dirt on inside and outside before assembly.
- D. Prepare piping connections to equipment with flanges or unions.
- E. Keep open ends of pipe free from scale and dirt. Whenever work is suspended during construction protect open ends with temporary plugs or caps.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.
- C. Install piping to conserve building space and avoid interference with use of space.
- D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- E. Pipe Hangers and Supports:
 - 1. Install in accordance with ASME B31.9.
 - 2. Place hangers within 12 inches (300 mm) of each horizontal elbow.
- F. Provide clearance for installation of insulation and access to valves and fittings.
- G. Provide access where valves and fittings are not exposed. Coordinate access door locations in metal enclosure
- H. Slope steam piping one inch in 40 feet (0.25 percent) in direction of flow. Use eccentric reducers to maintain bottom of pipe level.
- I. Slope steam condensate piping one inch in 40 feet (0.25 percent). Provide drip trap assembly at low points and before control valves. Run condensate lines from trap to nearest condensate receiver. Provide loop vents over trapped sections.

- J. Prepare unfinished pipe, fittings, supports, and accessories ready for finish painting. Refer to Section 09 9123.
- K. Install valves with stems upright or horizontal, not inverted.

3.3 SCHEDULES

- A. Hanger Spacing for Steel Steam Piping.
 - 1. 3/4 inch (20 mm) and 1 inch (25 mm): Maximum span, 9 feet (2700 mm); minimum rod size, 1/4 inch (6 mm).
 - 2. 1-1/4 inches (32 mm): Maximum span, 11 feet (3.3 m); minimum rod size, 3/8 inch (9 mm).
 - 3. 1-1/2 inches (40 mm): Maximum span, 12 feet (3.6 m); minimum rod size, 3/8 inch (9 mm).
 - 4. 2 inches (50 mm): Maximum span, 13 feet (4.0 m); minimum rod size, 3/8 inch (9 mm).
- B. Hanger Spacing for Steel Steam Condensate Piping.
 - 1. 1/2 inch (15 mm), 3/4 inch (20 mm), and 1 inch (25 mm): Maximum span, 7 feet (2100 mm); minimum rod size, 1/4 inch (6 mm).
 - 2. 1-1/4 inches (32 mm): Maximum span, 8 feet (2400 mm); minimum rod size, 3/8 inch (9 mm).
 - 3. 1-1/2 inches (40 mm): Maximum span, 9 feet (2700 mm); minimum rod size, 3/8 inch (9 mm).
 - 4. 2 inches (50 mm): Maximum span, 10 feet (3.0 m); minimum rod size, 3/8 inch (9 mm).

END OF SECTION

SPECIALTIES

SECTION 23 2214
STEAM AND CONDENSATE HEATING SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Steam traps.
- B. Control valves.

1.2 RELATED REQUIREMENTS

- A. Section 23 2213 - Steam and Condensate Heating Piping.

1.3 REFERENCE STANDARDS

- A. ASME B31.9 - Building Services Piping; 2014.
- B. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings; 2004 (Reapproved 2014).
- C. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2016.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Provide for manufactured products and assemblies required for this project.
 - 2. Include product description, model, dimensions, component sizes, rough-in requirements, service sizes, and finishes.
 - 3. Submit schedule indicating manufacturer, model number, size, location, rated capacity, load served, and features for each specialty.
 - 4. Include electrical characteristics and connection requirements.
- C. Manufacturer's Installation Instructions: Indicate application, selection, and hookup configuration. Include pipe and accessory elevations.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

PART 2 PRODUCTS

2.1 STEAM TRAPS

- A. Steam Trap Applications:
 - 1. Use Thermostatic Steam Traps for:
 - a. Steam radiation units.
 - 2. Use Inverted Bucket Steam Traps for:
 - a. Branch lines.
- B. Steam Trap Performance:
 - 1. Select to handle minimum of two times maximum condensate load of apparatus served.
 - 2. Pressure Differentials:
 - a. Low Pressure Systems (5 psi (34 kPa) and less): 1/2 psi (3.4 kPa).
- C. Inverted Bucket Traps: ASTM A126, cast iron or semi-steel body with bolted cover, brass bucket, stainless steel seats and plungers, and stainless steel lever mechanism with knife edge operating surfaces.

SPECIALTIES

1. Rating: 60 psi (443 kPa) WSP.
2. Features: Access to internal parts without disturbing piping, top test plug, bottom drain plugs.
3. Accessories:
 - a. Integral inlet strainer of brass.
 - b. Integral inlet check valve.
 - c. Integral bimetal air vent.

2.2 AUTO CONTROL VALVES

- A. Manufacturers:
 1. Danfoss, LLC.; www.na.heating.danfoss.com.
 - a. RA2000 with remote dial and sensor
- B. Materials:
 1. Valve Body: Nickel plated brass.
 2. Valve Spindle: Brass, comply with ASTM A276/A276M, Type 431.
 3. Actuator Spring: Silicon chromium spring steel.
 4. Remote dial and sensor

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install steam and steam condensate piping and specialties in accordance with ASME B31.9.
- B. Install specialties in accordance with manufacturer's instructions.
- C. Steam Traps:
 1. Coordinate size with existing piping. Provide minimum 3/4 inch (20 mm) size on steam mains and branches.
 2. Install with union or flanged connections at both ends.
 3. Provide gate valve and strainer at inlet, and gate valve and check valve at discharge.
 4. Provide minimum 10 inch (250 mm) long, line size dirt pocket between apparatus and trap.
- D. Remove thermostatic elements from steam traps during temporary and trial usage, and until system has been operated and dirt pockets cleaned of sediment and scale.

END OF SECTION

SECTION 23 8200
CONVECTION HEATING AND COOLING UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Finned tube radiation and enclosure.

1.2 RELATED REQUIREMENTS

- A. Section 23 2213 - Steam and Condensate Heating Piping.
- B. Section 23 2214 - Steam and Condensate Heating Specialties.

1.3 REFERENCE STANDARDS

- A. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2013.
- B. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2014.

1.4 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide typical catalog of information including arrangements.
- C. Shop Drawings:
 - 1. Indicate cross sections of cabinets, grilles, bracing and reinforcing, and typical elevations.
- D. Selection Samples: For each finish product specified, color chart representing manufacturer's full range of available colors.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

PART 2 PRODUCTS

2.1 STEAM FINNED TUBE RADIATION

- A. Manufacturers:
 - 1. Modine Manufacturing Company; Model T: www.modineHVAC.com/#sle.
- B. Required Directory Listing: AHRI Directory of Certified Product Performance - Air-Conditioning, Heating, and Refrigeration Institute (AHRI); current edition at www.ahrinet.org.
- C. Heating Elements: 1 inch (25 mm) ID seamless copper tubing, mechanically expanded into evenly spaced aluminum fins sized 4 by 4 inches (100 by 100 mm), suitable for soldered fittings.
- D. Element Hangers: Quiet operating, ball bearing cradle type providing unrestricted longitudinal movement, on enclosure brackets. Coordinate number of brackets and mounting height with installation requirements.
- E. Enclosure: Prefinished steel with top and bottom outlet/inlet grilles.
 - 1. Height: 24"
 - 2. Thickness: 14 ga.
- F. Finish: Factory applied baked enamel of color as selected.
- G. Access Doors: For otherwise inaccessible valves, provide factory-made permanently hinged access doors, 6 by 7 inch (150 by 175 mm) minimum size, integral with cabinet.
- H. Accessories: Provide end panels, pre-made inside and outside corners and splice plates matching enclosure profile, thickness and finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are suitable for installation.
- B. Verify that field measurements are as indicated on drawings.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Install equipment exposed to finished areas after walls and ceilings are finished and painted.
- C. Do not damage equipment or finishes.
- D. Finned Tube Radiation:
 - 1. Locate on outside walls and run cover continuously wall-to-wall unless otherwise indicated.
 - 2. Install wall angles and end caps where units butt against walls.

3.3 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.

3.4 CLEANING

- A. After construction and painting is completed, clean exposed surfaces of units.
- B. Vacuum clean coils and inside of units.
- C. Touch-up marred or scratched surfaces of factory-finished cabinets using finish materials furnished by the manufacturer.

3.5 PROTECTION

- A. Provide finished cabinet units with protective covers during the balance of construction.

END OF SECTION

CONDUCTORS AND CABLES

SECTION 26 0519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Single conductor building wire.
- B. Metal-clad cable.
- C. Wiring connectors.
- D. Electrical tape.
- E. Wire pulling lubricant.
- F. Cable ties.

1.2 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.

1.3 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013.
- B. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2010.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- D. NECA 120 - Standard for Installing Armored Cable (AC) and Metal-Clad Cable (MC); 2012.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- G. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- H. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.
- I. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

CONDUCTORS AND CABLES

PART 2 PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Metal-clad cable is permitted only as follows:
 - 1. Where not otherwise restricted, may be used:
 - a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
 - b. Where concealed above accessible ceilings for branch circuits up to 20 A.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
- H. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - 3. Color Code:
 - a. 240/120 V, 1 Phase, 3 Wire System:
 - a) Phase A: Black.
 - b) Phase B: Red.
 - c) Neutral/Grounded: White.
 - b. Equipment Ground, All Systems: Green.
 - c. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.

2.3 SINGLE CONDUCTOR BUILDING WIRE

- A. Description: Single conductor insulated wire.
- B. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.

CONDUCTORS AND CABLES

- b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

2.4 METAL-CLAD CABLE

- A. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.
- B. Conductor Stranding:
 - 1. Size 10 AWG and Smaller: Solid.
 - 2. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation: Type THHN, THHN/THWN, or THHN/THWN-2.
- E. Grounding: Full-size integral equipment grounding conductor.
- F. Armor: Steel, interlocked tape.

2.5 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F (105 degrees C) for standard applications and 302 degrees F (150 degrees C) for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.

2.6 ACCESSORIES

- A. Electrical Tape:
 - 1. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil (0.18 mm); resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F (-18 degrees C) and suitable for continuous temperature environment up to 221 degrees F (105 degrees C).
- B. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
- C. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that work likely to damage wire and cable has been completed.
- B. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.3 INSTALLATION

- A. Circuiting Requirements:
 - 1. When circuit destination is indicated without specific routing, determine exact routing required.
- B. Install products in accordance with manufacturer's instructions.

CONDUCTORS AND CABLES

- C. Perform work in accordance with NECA 1 (general workmanship).
- D. Install metal-clad cable (Type MC) in accordance with NECA 120.
- E. Installation in Raceway:
 - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 - 2. Pull all conductors and cables together into raceway at same time.
 - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- F. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- G. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- H. Terminate cables using suitable fittings.
 - 1. Metal-Clad Cable (Type MC):
 - a. Use listed fittings.
 - b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.
- I. Install conductors with a minimum of 12 inches (300 mm) of slack at each outlet.
- J. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- K. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- L. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.
- M. Insulate ends of spare conductors using vinyl insulating electrical tape.
- N. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- O. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

END OF SECTION

SECTION 26 0533.13
CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Intermediate metal conduit (IMC).
- B. Conduit fittings.
- C. Accessories.

1.2 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.
- C. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- D. Section 26 0529 - Hangers and Supports for Electrical Systems.
- E. Section 26 0533.16 - Boxes for Electrical Systems.
- F. Section 26 0533.23 - Surface Raceways for Electrical Systems.

1.3 REFERENCE STANDARDS

- A. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit (EIMC); 2005.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
- D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2012.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- G. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 - 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 - 5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.1 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Exposed, Interior, Subject to Physical Damage: Use intermediate metal conduit (IMC).
 - 1. Locations subject to physical damage include, but are not limited to:
 - a. Exposed within Gym.

2.2 CONDUIT REQUIREMENTS

- A. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Minimum Conduit Size, Unless Otherwise Indicated:
 - 1. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
- D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.3 INTERMEDIATE METAL CONDUIT (IMC)

- A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.
- B. Fittings:
 - 1. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 - 2. Material: Use steel or malleable iron.
 - 3. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.4 ACCESSORIES

- A. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force (890 N).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in accordance with NECA 1 (general workmanship).
- C. Install intermediate metal conduit (IMC) in accordance with NECA 101.
- D. Conduit Routing:
 - 1. When conduit destination is indicated without specific routing, determine exact routing required.
 - 2. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.

3. Arrange conduit to provide no more than 150 feet (46 m) between pull points.
- E. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 3. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.
- F. Connections and Terminations:
1. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 2. Use suitable adapters where required to transition from one type of conduit to another.
 3. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 4. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 5. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- G. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- H. Provide grounding and bonding in accordance with Section 26 0526.

3.3 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective conduits.

3.4 CLEANING

- A. Clean interior of conduits to remove moisture and foreign matter.

3.5 PROTECTION

- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 0533.16
BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches (1,650 cu cm), including those used as junction and pull boxes.

1.2 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0533.13 - Conduit for Electrical Systems:
 - 1. Conduit bodies and other fittings.
- D. Section 26 0533.23 - Surface Raceways for Electrical Systems:
 - 1. Accessory boxes designed specifically for surface raceway systems.

1.3 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2012.
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
 - 3. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
 - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for outlet and device boxes and junction and pull boxes.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.

PART 2 PRODUCTS

2.1 BOXES

- A. General Requirements:

1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
 2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
 3. Provide products listed, classified, and labeled as suitable for the purpose intended.
 4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
 5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 3. Use raised covers suitable for the type of wall construction and device configuration where required.
 4. Do not use "through-wall" boxes designed for access from both sides of wall.
 5. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 6. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Box Supports:
 1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
- E. Install boxes plumb and level.
- F. Install boxes as required to preserve insulation integrity.
- G. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- H. Close unused box openings.
- I. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

3.3 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.4 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 5100
LIGHTING FIXTURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Emergency lighting units.
- B. Exit signs.

1.2 RELATED REQUIREMENTS

- A. Section 26 0533.16 - Boxes for Electrical Systems.
- B. Section 26 5600 - Exterior Lighting.

1.3 REFERENCE STANDARDS

- A. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.
- B. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. NFPA 101 - Life Safety Code; 2015.
- E. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
 - 2. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
 - 3. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
- C. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

1.6 QUALITY ASSURANCE

- A. Comply with requirements of NFPA 70.
- B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting) and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

PART 2 PRODUCTS

2.1 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.2 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- E. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

2.3 EMERGENCY LIGHTING UNITS

- A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
- B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
- C. Battery:
 - 1. Size battery to supply all connected lamps, including emergency remote heads where indicated.
- D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
- E. Provide low-voltage disconnect to prevent battery damage from deep discharge.
- F. Accessories:
 - 1. Provide compatible accessory wire guards where indicated.

2.4 EXIT SIGNS

- A. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
 - 1. Number of Faces: Single- or double-face as indicated or as required for installed location.
 - 2. Directional Arrows: As indicated or as required for installed location.
- B. Powered Exit Signs: Internally illuminated with LEDs unless otherwise indicated.
 - 1. Self-Powered Exit Signs:
 - a. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
 - b. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
 - c. Provide low-voltage disconnect to prevent battery damage from deep discharge.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

- A. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.3 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- F. Install accessories furnished with each luminaire.
- G. Bond products and metal accessories to branch circuit equipment grounding conductor.
- H. Emergency Lighting Units:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- I. Exit Signs:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
- J. Install lamps in each luminaire.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.5 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting) and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.6 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

**SECTION 31 2316
EXCAVATION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Excavating for footings, paving, and site structures.
- B. Temporary excavation support and protection systems.

1.2 RELATED REQUIREMENTS

- A. Section 01 7000 - Execution: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
- B. Section 31 2200 - Grading: Grading.
- C. Section 31 2323 - Fill: Fill materials, backfilling, and compacting.

1.3 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Bedding and Fill to Correct Over-Excavation:
 - 1. See Section 31 2323 for bedding and backfill materials at general excavations.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the work are as indicated.
- B. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.
- C. Protect existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- D. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.3 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.

3.4 EXCAVATING

- A. Excavate to accommodate new structures and construction operations.
 - 1. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
 - 2. Hand trim excavations. Remove loose matter.
- B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Do not interfere with 45 degree bearing splay of foundations.

- D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.5 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.
- B. See Section 31 2323 for fill, backfill, and compaction requirements at general excavations.

3.6 REPAIR

- A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

3.7 CLEANING

- A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.
- B. Remove excavated material that is unsuitable for re-use from site.
- C. Remove excess excavated material from site.

3.8 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 31 2323
FILL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Filling, backfilling, and compacting for footings, slabs-on-grade, and site structures.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.

1.3 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.

1.4 REFERENCE STANDARDS

- A. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012.
- C. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
- D. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data for Manufactured Fill.
- C. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where designated.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), and debris.
 - 3. Complying with ASTM D2487 Group Symbol CL.
- B. Structural Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches (75 mm), rocks larger than 2 inches (50 mm), and debris.
 - 3. Complying with ASTM D2487 Group Symbol CL.
- C. Granular Fill - Gravel : Pit run washed stone; free of shale, clay, friable material and debris.
 - 1. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. 3/4 inch (19 mm) sieve: 95 to 100 percent passing.

- b. No. 4 (4.75 mm) sieve: 35 to 60 percent passing.
 - c. No. 16 (1.18 mm) sieve: 15 to 35 percent passing.
- D. Topsoil: Topsoil excavated on-site.
- 1. Select.
 - 2. Graded.
 - 3. Free of roots, rocks larger than 1/2 inch (12 mm), subsoil, debris, large weeds and foreign matter.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that survey bench marks and intended elevations for the Work are as indicated.
- B. Identify required lines, levels, contours, and datum locations.
- C. Verify areas to be filled are not compromised with surface or ground water.

3.2 PREPARATION

- A. Scarify subgrade surface to a depth of 6 inches (150 mm) to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.3 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum 2 inches in 10 feet (50 mm in 3 m), unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- F. Correct areas that are over-excavated.
 - 1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- G. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, Ramps, and similar construction: 97 percent of maximum dry density.
- H. Reshape and re-compact fills subjected to vehicular traffic.
- I. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.4 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. At Foundation Walls and Footings:
 - 1. Use general fill.
 - 2. Fill up to subgrade elevation.
 - 3. Compact each lift to 90 percent of maximum dry density.
 - 4. Do not backfill against unsupported foundation walls.
 - 5. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

3.5 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch (25 mm) from required elevations.

3.6 CLEANING

- A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.
- D. Restore any disturbed areas to original condition.

END OF SECTION

SECTION 32 3119
DECORATIVE METAL FENCES AND GATES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Decorative steel fences.

1.2 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 31 2316 - Excavation.

1.3 REFERENCE STANDARDS

- A. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2016.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- C. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2011.
- D. ASTM D523 - Standard Test Method for Specular Gloss; 2014.
- E. ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint; 2002 (Reapproved 2009).
- F. ASTM D822/D822M - Standard Practice for Filtered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings; 2013.
- G. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments; 2008.
- H. ASTM D2244 - Standard Practice for Calculation of Color Differences from Instrumentally Measured Color Coordinates; 2011.
- I. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) ; 1993 (Reapproved 2010).
- J. ASTM D3359 - Test Method for Measuring Adhesion by Tape Test; 2009.
- K. ASTM F2408 - Standard Specification for Ornamental Fences Employing Galvanized Steel Tubular Pickets; 2016.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to start of work of this section; require attendance by affected installers.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings:
 - 1. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
- D. Manufacturer's Warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

- B. Installer Qualifications: Experienced with type of construction involved and materials and techniques specified and approved by fence manufacturer.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Store materials in a manner to ensure proper ventilation and drainage. Protect against damage, weather, vandalism and theft.

1.8 WARRANTY

- A. Provide 10 year manufacturer warranty for defects in workmanship and materials, including finish..

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Decorative Metal Fences and Gates:
 - 1. Ameristar Perimeter Security, USA; Montage II: www.ameristarfence.com/#sle.

2.2 FENCES

- A. Fences: Complete factory-fabricated system of posts and panels, accessories, fittings, and fasteners; finished with electrodeposition coating, and having the following performance characteristics:
- B. Electro-Deposition Coating: Multistage pretreatment/wash with zinc phosphate, followed by epoxy primer and acrylic topcoat.
 - 1. Total Coating Thickness: 2 mils (0.058 mm), minimum.
 - 2. Color: As selected by Architect from manufacturer's standard range.
 - 3. Coating Performance: Comply with general requirements of ASTM F2408.
 - a. Adhesion: ASTM D3359 (Method B); Class 3B with 90 percent or more of coating remaining in tested area.
 - b. Corrosion Resistance: ASTM B117, ASTM D714 and ASTM D1654; 1/8 inch (15.8 mm) coating loss or medium No.8 blisters after 1,500 hours.
 - c. Impact Resistance: ASTM D2794; 60 inch pounds (6.8 N m).
 - d. Weathering Resistance: ASTM D523, ASTM D822/D822M and ASTM D2244; less than 60 percent loss of gloss.
- C. Steel: ASTM A653/A653M; tensile strength 45,000 psi (310 MPa), minimum.
 - 1. Hot-dip galvanized; ASTM A653/A653M, G60.
- D. Fasteners: ASTM A276/A276M, Type 302 stainless steel; finished to match fence components.
 - 1. Tamper-proof security bolts.

2.3 WELDED STEEL FENCE

- A. Provide fence meeting requirements for Industrial class as defined by ASTM F2408.
- B. Fence Panels: Fusion welded; 8 feet (2.4 m) high by 6 feet (1.8 m) long.
 - 1. Panel Style: Two rail.
 - 2. Attach panels to posts with manufacturer's standard panel brackets.
- C. Posts: Steel tube.
 - 1. Size: 3 inches (76 mm) square by 12 gauge, 0.109 inch (2.76 mm thick), with manufacturer's standard cap.
- D. Rails: Manufacturer's standard, double-wall steel channel 1-3/4 inch (44.5 mm) square by 12 gauge, 0.1094 inch (2.76 mm thick) with prepunched picket holes.
 - 1. Picket-to-Rail connection: Fusion welded.
- E. Pickets: Steel tube.
 - 1. Spacing: 3-3/4 inch (95.2 mm) clear.

2. Size: 1 inch (25.4 mm) square by 14 gauge, 0.099 inch (3 mm thick).
 3. Style: Pickets with finial extend above top rail and curve outward.
 4. Finial: Spear point.
- F. Flexibility: Capable of following variable slope of up to 1:2.
- G. Color: Black.

2.4 EGRESS GATE

- A. Gate Complete factory-fabricated pre-hung gate assembly of frame and gate panel, hardware, accessories, fittings, and fasteners; finished with electrodeposition coating matching fence finish.
1. Gate Frame: 1 3/4" tube frame 14ga. minimum with 1/4" plate hinge reinforcing.
 2. Infill: Expanded metal mesh 3/4" x#9 flattened with 1" square x 14ga pickets
 3. Hardware:
 - a. Exit Device: Sargent NL-16-43-8804
 - b. Mortise Core: Interchangable, match district format
 - c. Core : Medeco, match district master key system
 - d. Closer: LCN 4040XP parallel arm
 - e. Hinges: Stainless steel 5 knuckle bearing with non-removable pin
 4. Product: Exodus Egress Gate System; Ameristar Fence Products

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set fence posts in accordance with the manufacturer recommended spacing.
- C. When cutting rails immediately seal the exposed surfaces by:
 1. Removing metal shavings from cut area.
 2. Apply zinc-rich primer to thoroughly cover cut edge and drilled hole; allow to dry.
 3. Apply two coats of custom finish spray paint matching fence color.
 4. Failure to seal exposed surfaces in accordance with manufacturer's instructions will negate manufacturer's warranty.
- D. Space gate posts according to the manufacturers' drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected.
- E. Excavate post holes in accordance with Section 31 2316.

3.3 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6.3 mm).
- B. Maximum Offset From Indicated Position: 1 inch (25.4 mm).
- C. Minimum Distance from Property Line: 6 inches (152 mm).

3.4 CLEANING

- A. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- B. Clean fence with mild household detergent and clean water rinse well.

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- C. Touch up scratched surfaces using materials recommended by manufacturer. Match touched-up paint color to factory-applied finish.

END OF SECTION

**SECTION 32 9219
SEEDING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Placing topsoil.
- B. Seeding, mulching and fertilizer.

1.2 RELATED REQUIREMENTS

- A. Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.
- B. Section 31 2323 - Fill: Topsoil material.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

PART 2 PRODUCTS

2.1 SEED MIXTURE

- A. Seed Mixture:
 - 1. Kentucky Blue Grass: 75 percent.
 - 2. Creeping Red Fescue Grass: 25 percent.

2.2 SOIL MATERIALS

- A. Topsoil: Excavated from site and free of weeds.

2.3 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that prepared soil base is ready to receive the work of this Section.

3.2 PREPARATION

- A. Place topsoil in accordance with Section 31 2200.

3.3 SEEDING

- A. Apply seed at a rate of 20 lbs per 1000 sq ft (____ Kg per 1000 sq m) evenly in two intersecting directions. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller not exceeding 112 lbs (50 Kg).
- E. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches (3 mm). Maintain clear of shrubs and trees.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches (100 mm) of soil.

- G. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches (100 by 100 mm).

3.4 MAINTENANCE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
- B. Immediately reseed areas that show bare spots.
- C. Protect seeded areas with warning signs during maintenance period.

END OF SECTION