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Addendum No. 4

Brandywine School District
CARRCROFT
Wilmington, DE

Bid No.: BSD 18005-GCSERVICES-

Brandywine School District – Carrcroft Elementary School Addition and Renovation

Tt Project No. 200-15704-17001

Addendum No. 4
to
Drawings and Project Manual

January 26, 2018

To: ALL BIDDERS

This ADDENDUM forms a part of the BIDDING AND CONTRACT DOCUMENTS and modifies the following documents:
Original DRAWINGS dated December 12, 2017
PROJECT MANUAL dated December 12, 2017.
Acknowledge receipt of the ADDENDUM in the space provided on the FORM OF PROPOSAL

This ADDENDUM consists of eight (8) pages not including the attachments:

1.0 PROJECT MANUAL – MODIFICATIONS

1.1 Spec Section 09 00 00; Finish Schedule

1.1.1 **ADD** Paint Color P-7 for the exposed ceiling structure paint color. (Noted as color selection is TBD).

1.2 Spec Section 04 20 00; Unit Masonry

1.2.1 Page 04 20 00-6; Paragraph 2.4.C: Face Brick

1.2.1.1 **CHANGE** article to read as follows:

"C. Face Brick: Facing brick complying with ASTM C 216.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

a. Glen Gery, 26-HB Redburn

2. Grade: SW.
3. Type: FBS.
4. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested per ASTM C 67.
5. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
6. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.
7. Application: Use where brick is exposed unless otherwise indicated."

1.3 Spec Section 08 71 00; Door Hardware

1.3.1 **REPLACE** Spec Section in its entirety with "Revised" Spec Section attached to this Addendum.

1.4 Spec Section 23 07 60, Air Handling Equipment

1.4.1 Page 23 07 60-3; Paragraph 2.1.G; **ADD** "VTS" as an approved Manufacturer.

1.4.2 Page 23 07 60-5; Paragraph 2.2.H; **ADD** "Renew-Aire" as an approved manufacturer.

1.5 Spec Section 26 06 01; Lighting Protection Switches

1.5.1 **DELETE** Spec Section in its entirety

1.6 Spec Section 26 06 06; Automatic Transfer Switches

1.6.1 **ADD** Spec Section in its entirety, attached to this Addendum.

1.7 Spec Section 26 06 12; Emergency Generator Systems

1.7.1 26 06 12-2; Paragraph 2.2.B; **CHANGE** standby rating to 30KW/37.5KVA

2.0 DRAWINGS – MODIFICATIONS

2.1 Drawing A-101; FIRST FLOOR NEW CONSTRUCTION PLAN

2.1.1 **REPLACE** with Revised Drawing attached to this addendum.

2.1.1.1 **CHANGED** Notes 2, 30 & 31. **UPDATED** The Chain Link Fence layout and Notes; **ADDED** Dimensions to Chain Link Fence.

2.2 Drawing A-102; LOWER LEVEL DEMOLITION & NEW CONSTRUCTION PLAN

2.2.1 **REPLACE** with Revised Drawing attached to this addendum.

2.2.1.1 **ADDED** Exterior Building Elevation 3/A102 (Demolition detail)

2.3 Drawing A-103; ROOF PLAN DEMOLITION & NEW WORK

2.3.1 **REPLACE** with Revised Drawing attached to this addendum.

2.3.1.1 **ADDED** Reference to Section 5/A302; **CHANGED** Note D34; **UPDATED** Roof Legend To Show Downspouts; **CHANGED** Description Of Metal Deck For Roof System Rs-1.

2.4 Drawing A-104; FIRST FLOOR NEW REFLECTED CEILING PLAN

2.4.1 **REPLACE** with Revised Drawing attached to this addendum.

2.4.1.1 **UPDATED** Notes For Ceiling Types E & F.

2.5 Drawing A-201; EXTERIOR ELEVATIONS & BUILDING SECTIONS

2.5.1 **REPLACE** with Revised Drawing attached to this addendum.

2.5.1.1 **CHANGED** Downspout Boots To Splash Blocks On Elevations 2/A201 & 3/A201; **CHANGED** Keynote "E" To Read The Same; **MOVED** Exterior Elevation To Demo Sheet A102.

2.6 Drawing A-302; WALL SECTIONS

2.6.1 **REPLACE** with Revised Drawing attached to this addendum.

2.6.1.1 **ADDED** Wood Window Sill To Section; **ADDED** New Step Flashing Detail For Addition

2.7 Drawing A-401; ENLARGED PLAN & ELEVATIONS

2.7.1 **REPLACE** with Revised Drawing attached to this addendum.

2.7.1.1 **ADDED** More Dimension Information On Enlarged Plan 3/A401

2.8 Drawing A-402; INTERIOR ELEVATIONS

2.8.1 **REPLACE** with Revised Drawing attached to this addendum.

2.8.1.1 **MODIFIED** Sink Cabinet into an ADA Accessible Sink Cabinet and **UPDATED** them on The Millwork Schedule See 2/A402 & 8/A402; Re-Identified Whiteboards

2.9 Drawing A-403; ENLARGED STAIR PLAN & DETAILS

2.9.1 **REPLACE** with Revised Drawing attached to this addendum.

2.9.1.1 **UPDATED** Note for Rubber Treads only; **CHANGED** Note for Stringer Paint

2.10 Drawing A-404; MILLWORK DETAILS

2.10.1 **REPLACE** with Revised Drawing attached to this addendum.

2.10.1.1 **UPDATED** Millwork Detail 2/A404 and Millwork Schedule to be ADA Sink Cabinet; **UPDATED** Note On 7/A404; **REVISED** Notes and Dimensions on 9/A404.

2.11 Drawing A-601; DOOR SCHEDULE, WINDOW & DOOR DETAILS

2.11.1 **REPLACE** with Revised Drawing attached to this addendum.

2.11.1.1 **UPDATED** Window Sill "WS2" to be Wood Sill; **UPDATED** Wood Sill Elevation 1/A601 to be Wood Sill And Have Apron; **ADDED** Door Type "N2" for Fire Doors.

2.12 Drawing A-810; FIRST FLOOR FINISH PLAN & SCHEDULE

2.12.1 **REPLACE** with Revised Drawing attached to this addendum.

2.12.1.1 **ADDED** Paint Color P-7

2.13 Drawing M-101; BASEMENT DEMOLITION/NEW WORK – MECHANICAL

2.13.1 **RELOCATE** the (2) outside air risers and combined them into one intake hood. Refer to Sketch M/SK-0.01.

2.13.2 **RELOCATE** unit heater UH-1 and associated piping and controls into Stair Tower. Refer to Sketch M/SK-0.

2.13.3 **RELOCATE** the refrigerant safety relief valve risers into the chase. Refer to Sketch M/SK-0.01.

2.14 Drawing M-102; FIRST FLOOR PLAN – MECHANICAL DUCTWORK

2.14.1 **RELOCATE** the (2) outside air risers and combined them into one intake hood. Refer to Sketch M/SK-0.02

2.15 Drawing M-601; SCHEDULES MECHANICAL

2.15.1 Outside Air Intake Schedule:

2.15.1.1 **REVISE** data for OAI-1. Refer to Sketch M/SK-0.03

2.15.1.2 **DELETE** data for OAI-2 completely.

2.16 Drawing ED-101; LEGEND, NOTES & BASEMENT DEMOLITION PLAN - ELECTRICAL

2.16.1 **CLARIFY** requirements for voice/data outlet. Refer to attached Sketch E/SK-0.03.

2.17 Drawing E-102; FIRST FLOOR PLAN – POWER

2.17.1 **ADD** Lighting in Stair #006. Refer to attached Sketch E/SK-0.06.

2.18 Drawing E-104; SECOND FLOOR PLAN - LIGHTING

2.18.1 **REMOVE** existing security devices in Stair Tower 2. Refer to attached Sketch E/SK-0.01.

2.19 Drawing E-105; FIRST FLOOR PLAN - POWER

2.19.1 **ADD** Note and circuit for power to power supplies. **ADD** door release for new door to corridor. Refer to attached Sketch E/SK-0.02.

2.19.2 **ADD** devices and circuits for power screen and projector. Refer to attached Sketch E/SK-0.02.

3.0 CONTRACTOR QUESTIONS:

3.1 **Question:** For the ceiling mounted projector(s) and TV(s) by the owner, will they be installing the mounts for them as well?

Response: Yes, TV and projector mounts will be by Owner.

3.2 **Question:** Touchscreen Smartboards: Will the owner be furnishing and installing these along with the other A/V equipment?

Response: Yes.

3.3 **Question:** Regarding the Heavy Timber Trusses. Are you looking for Solid timber or a laminated timber? We're getting close to the width of the span that it might be hard to get the solid timber

Response: Solid Timber.

3.4 **Question:** Please provide the following:

1. Provide interior signage specifications and schedule.
2. Provide fire extinguishers and fire extinguisher cabinet specifications.
3. Provide visual display board specifications

Response: Fire Extinguishers and Cabinets specs were issued in addendum #3. Signage package will be provided by Owner. Markerboards to be Series 4 by Claridge Products or equivalent.

3.5 **Question:** I have reviewed the documents on the FTP Site and there is a Lightning Protection Specification and it requires UL Certification so the Entire School must be protected. There is nothing showing an existing Lightning Protection System. RFI's are due 1-25-2018 and we will need to know the following:

1. Is there an existing LP system on the existing structure?
2. If there is we will provide a quote to expand the existing LP System to the new addition.
3. If there is no existing LP System we will need Roof Plans and Elevations of the entire school to provide the UL Certification.

Response: None Required. Section omitted per addendum #4

3.6 **Question:** Who is the fire alarm vendor for this project? It appears that the existing system is to be reused to some extent. Please clarify scope of work for fire alarm.

Response: Omit all devices for Fire Alarm shown in alternate areas. Existing System is Simplex 4100ES.

3.7 **Question:** The drawing show wireless clocks throughout both base bid and alternate area. Are the clocks to be all base bid work?

Response: Omit work associated with Clock System by others. Omit Spec Section 26 80 00.

3.8 **Question:** Fire alarm is shown throughout base bid and alternate work areas. Is fire alarm to be all base bid work?

Response: Fire Alarm System is extension of Existing in Base Bid. Omit all devices for Fire Alarm shown in alternate areas.

3.9 **Question:** Please provide specifications for the ATS.

Response: See Addendum #4

3.10 **Question:** Please provide specifications for the local sound system shown on Sheets E101, 102 and 103.

Response: Speaker indicated are intercom speakers. Speakers are by others. This Contract owns conduit and pull strings in new areas with exposed ceilings.

3.11 **Question:** Sheet ED103 shows demolition of lighting fixtures in the lobby. Sheet E102 does not show new fixture. Please clarify scope of work in this area.

Response: Answered within this Addendum.

3.12 **Question:** Please clarify the following with regard to Specification 260612, Emergency Generator Systems:

a. Page 5, 2.10; A. indicates to provide a "pre-painted forest green outdoor enclosure". Is standard manufacturer's color acceptable?
Response: Standard is acceptable.

b. Page 5, 2.10; D. indicates to provide "floor" within the enclosure. Is this floor necessary?
Response: No

c. Page 6, 2.10; D., 4; indicates floor and underframes shall have "I" beams and also references diesel generator with full steel floor. Is this necessary?
Response: Omit

d. Page 6, 2.10; E., 2. Indicates to provide motorized intake and gravity discharge louvers on the generator enclosure. Is this necessary to provide? Kohler's standard factory enclosure does not provide. Motorized/gravity louvers. Would need to outsource enclosure to meet this. Is standard factory fixed louvers accepted?
Response: Standard Factory Louvers.

e. Page 6, 2.11; A. indicates a four (4) hour load test. Confirm this is a site testing ad not a factory testing.
Response: Site Test

f. Unable to locate any written specification pertaining to the automatic transfer switch(es). Please provide written specification.
Response: Spec Section Attached to this Addendum.

3.13 **Question:** Please find attached Quantech water-cooled chiller substitution request.

Response: This substitution request is not approved.

3.14 **Question:** Can you please get verification that the toilet and sink walls in rooms 136 Staff Toilet, 154A HC Lav, 154B HC Lav are not getting wall tile. It shows on Drawing A401 three walls getting tile and the fourth wall getting W/P 1 or 2 please verify so I can price accordingly.

Response: That is correct. Also refer to Sheet A-810 and the Finish Schedule Specification.

3.15 **Question:** Please provide a specification for acoustic ceiling tile type A2. Type A1 is the only one described in Specification 095113.

Response: Type A2 is to be Ultima Health Zone, High NRC by Armstrong or equivalent. Type C is to be Optima Capz by Armstrong or equivalent.

3.16 **Question:** Please clarify who will be responsible for CCR Reports

Response: If this is required, it will be provided by Owner.

3.17 **Question:** There is a note on the bottom of Drawing C-07 that states "Provide directional arrows (typ.)". All of the directional arrows meant to be new or are they existing?

Response: All directional arrows shown are to be new per County requirement.

3.18 **Question:** Drawing C-08 has an ADA Parking Space detail showing new handicapped parking signs. The site plan shows existing handicapped parking sign to remain. Please confirm there are no new Handicapped parking signs.

Response: There are no new ADA signs proposed. The detail shown on plan is a standard detail covering both ADA striping and signage requirements.

3.19 **Question:** Drawing FP-1 has a detail for new Fire Lane signage. The site plan do not show any new Fire Lane signage. Please confirm there are no new Fire Lane signs required.

Response: There are no new fire lane signs proposed. The fire lane sign detail shown is a standard detail and can be removed from the plan.

3.20 **Question:** General Note 29 on A-001 states that all concealed wood framing and plywood sheathing is fire retardant. Please confirm what wood framing, if any/ really need to be fire retardant.

Response: Disregard, No Wood Framing needs to be Fire Retardant.

3.21 **Question:** The door schedule on A-601 shows door type N2, which is not detailed. Please provide.

Response: Door Type "N2" is a Fire Rated Door w/Glass. See details in Addendum No. 4.

3.22 **Question:** Elevations 4 and 6 on A-402 show whiteboards and touchscreen smartboards. Please confirm that these are by the owner. If they are by the GC, please provide a spec.

Response: Whiteboards are in GC scope. Smartboards are by Owner.

3.23 **Question:** Drawing C-06 states that all new downspouts will discharge directly onto lawn areas. New construction keynote 02 on A-101 states to provide cast iron downspout boots at the new downspouts. Drawing C-06 shows the relocated storm line, with no leaders to downspout location. Please confirm that new downspouts will discharge directly to the lawn, and no downspout boots are required.

Response: We're deleting the Downspouts Boot due to DNREC's Requirement to handle Stormwater on site. We're changing to Splash Block, see details in Addendum No. 4.

3.24 **Question:** The plumbing fixture schedule on P-100 states to provide a quantity of sixty one (61) cast iron downspout boots. Please confirm that this is an error, and that this project does not include any new cast iron downspout boots.

Response: We're deleting the Downspouts Boot due to DNREC's Requirement to handle Stormwater on site. We're changing to Splash Block, see details in Addendum No. 4.

3.25 **Question:** Addendum #3 provided a door hardware schedule which omits door openings 121, 128B, and 152A. Please provide hardware set numbers for these door openings.

Response: Hardware sets have been added to these doors, see reissued Hardware Specification in this addendum.

3.26 **Question:** Addendum #3 provided a toilet accessories spec which contains item TA-09 Sanitary Napkin Disposers. The toilet accessories schedule on A-401 does not show a sanitary napkin disposers. Please clarify.

Response: Disregard, No Sanitary Napkin Dispensers required for this project.

3.27 **Question:** Will the architect be responsible for CAD as-built updates?

Response: Yes.

3.28 **Question:** Please confirm that the owner will provide the inspections listed in section 018000 – Schedule of Special Inspections.

Response: Yes, Special Inspections are by Owner.

3.29 **Question:** Is there a quantity allowance associated with the two unit prices that is to be carried in the base bid?

Response: No.

ATTACHMENT LIST

1. Revised Spec Section 08 71 00 Door Hardware
2. Spec Section 26 06 06 Automatic Transfer Switches
3. Spec Section 32 31 19 Decorative Metal Fences and Gates
4. Revised Drawing A-101

5. Revised Drawing A-102
6. Revised Drawing A-103
7. Revised Drawing A-104
8. Revised Drawing A-201
9. Revised Drawing A-302
10. Revised Drawing A-401
11. Revised Drawing A-402
12. Revised Drawing A-403
13. Revised Drawing A-404
14. Revised Drawing A-601
15. Revised Drawing A-810
16. Sketch M-SK-0.01
17. Sketch M-SK-0.02
18. Sketch E-SK-0.01
19. Sketch E-SK-0.02
20. Sketch E-SK-0.03
21. Sketch E-SK-0.06
22. Sketch E-SK-0.07

END OF ADDENDUM No. 4

SECTION 08 71 00

DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Work under this section comprises of furnishing and installing commercial door hardware needed for a complete and operational system for following:

a. Swinging doors
b. Sliding doors
c. Folding doors
d. Other doors indicated in schedules and plans

2. Cylinders for doors specified in other Sections

B. Products Supplied but not Installed under this Section:

1. Cylinders for locks on storefront entrance doors
2. Cylinders for locks on all-glass entrance doors
3. Cylinders for locks on overhead coiling doors and grilles
4. Final replacement cores and keys installed by Owner

C. Related Sections:

1. Section 08 11 00 Steel Doors and Frames
2. Section 08 21 00 Wood Doors
3. Section 08 41 00 Aluminum-Framed Entrances and Storefronts – all hardware in Section 08 71 00.
4. Section 08 45 00 All-Glass Entrances

1.2 REFERENCES

A. Publications listed herein are part of this specification to extent referenced.

B. American National Standards Institute:

1. ANSI A156 Series
2. ANSI A115W Wood Door Hardware Standards; Hardware Preparation
3. ANSI A115 Specifications for Steel Door and Frame Preparation for Hardware
4. ANSI A117.1 Accessible and Usable Buildings and Facilities
5. ANSI A250.6 Hardware on Steel Doors (Reinforcement - Applications)

C. Americans with Disabilities Act Accessibility Guidelines (ADAAG)

D. Door and Hardware Institute:

1. DHI Publication - Abbreviations and Symbols

2. DHI Publication - Basic Architectural Hardware
3. DHI Publication - Hardware for Labeled Fire Doors (with supplements)
4. DHI Publication - Hardware Reinforcements on Steel Doors and Frames
5. DHI Publication - Installation Guide for Doors and Hardware
6. DHI Publication - WDHS-1 Template Book Criteria for Wood Doors
7. DHI Publication - WDHS-3 Recommended Hardware Locations for Wood Flush Doors
8. DHI Publication - For Processing Hardware Schedules and Templates

E. National Fire Protection Association:

1. NFPA 70 National Electrical Code
2. NFPA 80 Standard for Fire Doors and Windows
3. NFPA 101 Life Safety Code
4. NFPA 105 Recommended Practice for the Installation of Smoke-Control Door Assemblies
5. NFPA 252 Standard Methods of Fire Tests of Door Assemblies

F. Steel Door Institute:

1. SDI-109 Hardware for Standard Steel Doors and Frames

G. Underwriters Laboratories, Inc.

1. UL Standard 10C Positive Pressure Fire Tests of Door Assemblies
2. UL Standard 1784 Air Leakage Tests of Door Assemblies
3. UL Building Materials Directory

1.3 SUBMITTALS

A. Submittal Sequence:

1. Submit final Door Hardware Schedule at earliest possible date, particularly where approval of Door Hardware Schedule must precede fabrication of other work that is critical in Project construction schedule.
2. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to coordinated review of Door Hardware Schedule.

B. Product Data:

1. Submit manufacturer's technical product fact sheets describing each item of hardware to be provided including material descriptions, dimensions of individual components and profiles, and finishes.

C. Door Hardware Schedule:
1. Submit door hardware schedule prepared by or under supervision of a DHI certified Architectural Hardware Consultant (AHC) or Certified Door Consultant (CDC) detailing fabrication and assembly of door hardware, as well as procedures and diagrams.
2. Coordinate Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
3. Format:
   a. Comply with scheduling sequence and vertical form as described in DHI's *Sequence and Format for the Hardware Schedule*.

b. Horizontal hardware schedules are not acceptable.
c. Submit 6 copies of hardware schedule.

4. Organization:

a. Organize door hardware schedule into hardware sets indicating complete designations of every item needed for each door or opening.
b. Organize door hardware sets in same order as in Door Hardware Schedule contained in Part 3 of this specification.
c. For doors of different sizes or where hinges, locks, or closers are different, a separate heading shall be used. No labeled openings shall be combined with non-labeled openings.

5. Content:

a. Type, style, function, size, label, hand, and finish for each door hardware item
b. Name and manufacturer of each item
c. Fastenings and other pertinent information
d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule
e. Explanation of abbreviations, symbols, and codes contained in schedule
f. Mounting locations for door hardware
g. Door and frame sizes and materials

D. Shop Drawings:

1. Provide a copy with each hardware schedule submitted.
2. Provide description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems; include description of component functions that occur in following situations:
   a. Authorized person wants to enter
   b. Authorized person wants to exit
   c. Unauthorized person wants to enter
   d. Unauthorized person wants to exit

3. Provide elevation drawings of electronic hardware and systems identifying locations of system components with respect to their placement in door opening.

a. Indicate mounting heights and locations of electronic components listed by opening in hardware submittals.

4. Wiring Diagrams:

a. Submit detail wiring for power, signal, and control systems for each opening that requires electrified hardware, except openings where only magnetic hold-opens are specified. Differentiate between manufacturer-installed and field-installed wiring. Include following:

(1) System schematic
(2) Point-to-point wiring diagram
(3) Riser diagram
(4) Elevation of each door

E. Samples:

1. Submit samples of door hardware items if requested by Architect. Accepted samples may be incorporated into Work.

F. Quality Assurance Submittals:

1. Test Reports:

a. Provide product test reports based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, indicating current products comply with requirements.

2. Manufacturer's Instructions:

a. Submit instructions for installation and maintenance of operating parts and finish.
b. Furnish templates and schedules needed for fabrication of hollow metal doors and frames, wood doors and frames, and other items related to hardware.
c. Submission for templates and template list shall follow procedures established by DHI publication *For Processing Hardware Schedules and Templates*.

3. Field Quality Assurance.

a. To ensure and validate the proper closing, latching, sealing and securing of a door the manufacturer of the gasket shall provide a program of Field Quality Assurance.
b. The program shall be acceptable to the architect and provide the site superintendent and installers with knowledge as to the industry acceptable standards for tolerances in manufacturing and field installation.
c. The program shall create an audit trail of documentation for the inspection of pre-machined doors for machining and sizing, including hinge backset and depth of mortise, width and height. An "Installation Checklist" and the "Industry Guidelines" shall also be furnished for verification of acceptability of related door, frame and hardware components prior to installing the gasket. These forms shall be part of the submittal process and shall be acknowledged by the site superior and returned to the manufacturer in a timely manner.
(1) http://dhsi-seal.com/inspectionforms.cfm

G. Closeout Submittals:

1. Operation and Maintenance:

a. Provide operation and maintenance data for hardware consisting of technical information as follows:

(1) Maintenance instructions for each item of hardware
(2) Catalog pages for each product
(3) Parts list for each product
(4) Copy of final hardware schedule
(5) Copy of final keying schedule

b. Include a copy of operational and maintenance descriptions in Operation and Maintenance Data Manual.

2. Warranties:

   a. Submit Special warranties specified in this Section.

3. Keying Schedule:

   a. Prepare and submit a keying schedule using keyset symbols referenced in DHI manual *Keying Systems and Nomenclature*. Include schematic keying diagram and index each key set to unique door designations.

      (1) Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.

   b. Keying schedule shall be prepared by or under supervision of supplier, detailing Owner's final keying instructions for locks.
   c. Submit 4 copies of keying schedule.

4. Deliver keys and bitting list to the Owner by registered mail or overnight package service.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Door Hardware Supplier:

   a. Door hardware supplier shall have warehousing facilities in Project's vicinity and shall employ a qualified Certified Architectural Hardware Consultant (AHC) available during course of Work to consult with Contractor, Architect, and Owner about door hardware and keying.

2. Architectural Hardware Consultant:

   a. Architectural Hardware Consultant shall be a person who is currently certified by Door and Hardware Institute as an Architectural Hardware Consultant (AHC) and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
   b. Architectural Hardware Consultant shall be experienced in providing consulting services for electrified door hardware installations.

3. Installer:

   a. Door hardware shall be installed by an experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Regulatory Requirements:

1. Hardware and installation shall comply with provisions and standards listed in IBC 2003.
2. Federal Accessibility Regulations:

a. Americans with Disabilities Act - ADA
b. Uniform Federal Accessibility Standards - UFAS
c. ANSI A117.1 Standard for Accessible and Usable Building s and Facilities
d. Accessibility Guidelines for Buildings and Facilities (ADAAG)

3. National Fire Protection Association:

a. NFPA 80 Standard for Fire Doors and Windows
b. NFPA 101 Life Safety Code
c. NFPA 105 Recommended Practice for the Installation of Smoke-Control Door Assemblies
d. NFPA 252 Standard Methods of Fire Tests of Door Assemblies

4. Underwriters Laboratories Inc.:

a. UL 10C Positive Pressure Fire Tests of Door Assemblies
b. UL 1784 Air Leakage Tests of Door Assemblies

5. ANSI/BHMA Standards

a. A115-W Series
b. A115 Series
c. A156 Series:

6. Door and Hardware Institute:

a. Abbreviations and Symbols
b. Basic Architectural Hardware
c. Hardware for Labeled Fire Doors (with supplements)
d. Hardware Reinforcements on Steel Doors and Frames
e. Installation Guide for Doors and Hardware
f. WDHS-1 Template Book Criteria for Wood Doors
g. WDHS-3 Recommended Hardware Locations for Wood Flush Doors

C. Certifications:

1. Hardware used in labeled fire or smoke rated openings shall be bear identifying label or mark indicating listing by Underwriters Laboratories, Inc., ITS (Warnock Hersey International), or other nationally recognized organizations acceptable to authority having jurisdiction.
2. Provide door hardware for fire-rated door assemblies complying with NFPA 80 for fire ratings indicated, based on testing in compliance with NFPA 252.
3. Electrified door hardware shall be listed and labeled as defined in NFPA 70, Article 100.

D. Pre-Installation Meetings:

1. Conduct conference on-site to comply with requirements in Division 1 for Project Meetings.
2. Topics to be discussed at meeting shall include:

a. Review items such as proper installation sequence, adjustments, attachment, and location of door hardware.

b. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.

E. Keying Conference:

1. Conduct conference on-site to comply with requirements in Division 1 for Project Meetings. Participants shall be Owner's representative, Contractor, hardware supplier, and lock manufacturer's representative.
2. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including but not limited to following:

a. Function of building, flow of traffic, purpose of each area, degree of security needed, and plans for future expansion
b. Preliminary key system schematic diagram
c. Requirements for key control system
d. Address for delivery of keys

F. Coordination:

1. Templates:

a. Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing door hardware to parties involved.
b. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with specified requirements.

2. Electrical System Roughing-In:

a. Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system, security system, building control system.
b. Refer to work specified in Division 16 applicable to electrified hardware items including, but not limited to conduit, pull boxes, wiring, and final connections.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading:

1. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Site.
2. Tag each item or package separately with identification related to final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.6 SPECIAL WARRANTY

A. Provide written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include but are not limited to following:

1. Structural failures including excessive deflection, cracking, or breakage

2. Faulty operation of operators and door hardware
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering

B. Warranty period shall be for not less than 3 years from Date of Substantial Completion unless otherwise indicated.

1. Electromagnetic Locks: 5 years
2. Manual Closers: 10 years

C. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.

1.7 MAINTENANCE

1. Furnish 3 dozen extra screws and other fasteners if each size, type and finish used with the hardware items provided.
2. Extra materials shall be stored on-site as directed by Owner.

B. Maintenance Service:

1. Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of door hardware installer.

a. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as needed for proper door hardware operation.
b. Provide parts and supplies as used in manufacture and installation of original products.

2. Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 PRODUCTS

2.1 MATERIALS

A. General Requirements:

1. Hardware shall be of best grade, entirely free of imperfections in manufacture and finish, and shall satisfactorily perform various functions needed.
2. Furnish necessary screws, bolts or others fastenings of suitable size and type to anchor hardware in position and match hardware as to material and finish. Provide Phillips flat-head screws except as otherwise indicated.
3. Do not use through-bolts for installations where bolt head or nut opposite face is exposed in other work. Use of sex bolts shall not be allowed.
4. Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as indicated. Items of hardware not definitely specified, but needed for satisfactory installation of hardware

shall be provided. Such items shall be of type and quality suitable for service needed and comparable to adjacent hardware.

5. Finishes shall comply with ANSI A156.18/ BHMA 1301. Finish designations cross references shall be as follows:

BHMA Code	Description	Nearest US Equiv.	BHMA Category	Basis Metal
600	Primed for painting	USP	D	Steel
626	Satin chromium plated	US26D	A	Brass; Bronze
628	Satin aluminum, clear anodized	US27	A	Aluminum
629	Bright stainless steel	US32	A	Stainless Steel
630	Satin stainless steel	US32D	A	Stainless Steel
652	Satin chromium plated	US26D	E	Steel
689	Aluminum painted	US28	E	Any

B. Substitutions:

1. Manufacturers and model numbers listed are to establish a standard of quality and design. The architect must approve all product substitutions. Any request for substitutions must be submitted 10 days before the bid date, to allow sufficient time for an addendum to be added to the bid document. In accordance with Section 016000, required data and physical samples must be provided to the architect for review.

2.2 HINGES

A. Butt Hinges: ANSI/ BHMA A156.1

1. Provide full mortise, template, 5-knuckle, button tip hinges with non-rising loose pins and ball type bearings.
2. Out-swinging exterior doors shall be furnished with stainless steel, hinges with non-removable pins or security studs.
3. Interior doors with locksets shall be furnished with non-removable pins hinges.
4. Hinges shall be furnished in following quantities:

    a. Doors up to 90” in height: 3 hinges
    b. Doors over 90” in height: Add 1 hinge for every additional 30”

5. Furnish hinge sizes not less than as follows:

    a. For 1 3/4” Thick Doors: Standard weight
        (1) Doors up to 3’-0” wide: 4 1/2 x 4 1/2 x 0.134 gauge
        (2) Doors 3’-0” to 4’-0” wide: 5 x 4 1/2 x 0.146 gauge
    b. For 1 3/4” Thick Doors: Heavy weight
        (1) Doors up to 3’-0” wide: 4 1/2 x 4 1/2 x 0.180 gauge
        (2) Doors 3’-0” to 4’-0” wide: 5 x 4 1/2 x 0.190 gauge

6. Furnish hinges of sufficient throw where needed to clear trim or permit doors to swing 180 degrees.
7. Finishes:

    a. Exterior Doors: BHMA #630 (US32D)
    b. Interior Doors: BHMA #652 (US26D)

8. Acceptable Manufacturers:

	Steel	Stainless Steel
a. Bommer:	TA2714	BB5002
b. McKinney:	BB1279	TA2314
c. Stanley:	FBB179	FBB168

9. Acceptable Manufacturers:

	Steel	Stainless Steel
a. Bommer:	BB5004	BB5006
b. McKinney:	T4A3786	T4A3386
c. Stanley:	FBB168	FBB199

B. Geared Continuous Hinges: ANSI/ BHMA A156.26 Grade 1

1. Provide full mortise, non-handed, full height hinges with interlocking cover and symmetrically templated hole pattern made from extruded aluminum.
2. Finish: BHMA #628 (US27)
3. Acceptable Manufacturers:
   a. Hager: 780-112 HD
   b. Select: SL-11HD
   c. Stanley: 661HD

2.3 LOCKSETS AND LATCHSETS

A. General Requirements:
1. Shape of lever shall be easy to grasp with one hand and not require tight grasping, tight pinching, or twisting of wrist.
2. Locksets and latchsets shall not require more than 15 lbf to release latch. Locks shall not require use of a key, tool, or special knowledge for operation.
3. Provide manufacturer's standard wrought box strike for each latchset and lockset with curved lip extended to protect frame without catching clothing. Finish shall match hardware set.
4. Locks and cylinders shall be provided with manufacturer's Schlage Primus 6-pin tumbler which complies with ANSI A156.5, unless otherwise indicated. Lock cylinder parts shall be made from brass/bronze, stainless steel, or nickel silver.

B. Cylindrical Locksets and Latchsets: Heavy duty
1. Provide cylindrical locksets and latchsets that comply to ANSI A156.2, Series 4000, Grade 1; tested to exceed 3,000,000 cycles. Functions as listed in Hardware Sets.
2. Locks shall meet ANSI A117.1, Accessibility Code.
3. Locks shall meet UL A label; to have a minimum listing for single doors 4' x 8'.
4. Locks shall have the ability to incorporate either a rigid or free-wheeling lever when in a locked mode and chassis shall be field changeable.
5. Levers shall be independent and bi-directional.
6. Levers shall be solid. Manufacturers utilizing lever fillers are not acceptable.
7. Levers shall have grooved tactile warnings on the back side of the lever. Manufacturers inserting devices and/or apply warning material will not be acceptable.
8. Lock chassis shall be a one-piece, multifunctional modular assembly that provides for interchange of lock function without disassembly of the lockset.
9. Spindle shall be "Deep-Draw" manufactured for maximum strength. Manufacturers utilizing stamped spindles are not acceptable.

10. Spring Cage shall have double compression springs. Manufacturers utilizing torsion springs are not acceptable.
11. Spindle and spring cage shall be a one piece integrated assembly.
12. Lockset anti-rotation plate shall interlock to the modular chassis. Manufacturers utilizing anti-rotation plates with bit-tabs are not acceptable.
13. Lockset adjustment plate shall be threaded for door thickness adjustment for doors 1 5/8" to 2 1/8" thickness. The adjustment plate shall have visual chassis marking for doors 1 ¾" thick.
14. Locks shall have field reversible handing.
15. Latchbolt to be steel with minimum ½" throw deadlatch on keyed functions; ¾" anti-friction deadlatch on pairs of doors.
16. Strikes to be 16 gage, with 1" deep box construction, curved lip of sufficient length to clear trim and protect clothing.
17. Finish: BHMA #626 (US26D)
18. Acceptable Manufacturers:
    a. Schlage: ND Series with Sparta lever design to match existing Brandywine School District Standard (BSD)

2.4 EXIT DEVICES

A. Exit Devices: ANSI/ BHMA A156.3, Grade 1
   1. Exit devices shall be listed by UL for accident and hazard. Devices shall conform to applicable requirements of NFPA 80 and NFPA 101.
   2. Shape of lever shall be easy to grasp with one hand and not require tight grasping, tight pinching, or twisting of wrist.
   3. Exit devices shall not require more than 15 lbf to release latch. Locks shall not require use of a key, tool, or special knowledge for operation.
   4. Exit devices mounted on labeled wood doors shall be through-bolt mounted in compliance with door manufacturer's requirements. Do not through-bolt if there has been special blocking specified in wood door specification; refer to Section 08210.
   5. Furnish filler plates and shim kits as needed for flush mounting of devices on doors.
   6. Provide touch bars with return stroke fluid dampers and rubber bottoming dampers, plus anti-rattle devices.
   7. Touch pad shall extend not less than one-half of door width. Touch pad height shall exceed height of mechanism case or rail assembly (T-Shaped) to eliminate pinch parts. If touch pad height does not exceed height of mechanism case/rail assembly, provide insert/filler on top and bottom of touch pad along mechanism case/rail to prevent pinch part. Provide stainless steel touch pads. Plastic touch pads shall not be acceptable.
   8. End caps shall be of heavy-duty metal alloy construction and provide horizontal adjustment to provide flush alignment with device cover plate. When device end cap is installed, no raised edges will protrude.
   9. Cylinder dogging to be furnished on non-fire rated doors.
   10. Surface strikes shall be roller type and come complete with a locking plate underneath to prevent movement. Devices shall have dead latching feature to prevent latchbolt tampering.
   11. Devices shall not have exposed rivets or screws on back of device that could be visible through a glass light.
   12. When removable mullions are listed, provide the type controlled by a key cylinder under masterkey system and from same manufacturer as exit device. Furnish stabilizers similar to Von Duprin 154 with removable mullions.

13. Surface vertical rod devices shall be UL labeled for fire door applications without the use of bottom rod assemblies. Where bottom rods are required for security applications, device shall be UL labeled for fire door applications with rod and latch guards by device manufacturer.
14. Outside trim shall be heavy-duty type fastened by means of concealed welded lugs and through-bolts from inside. Trim shall be forged brass with a minimum average thickness on escutcheon of 0.130". Pull plate with trim shall be brass with minimum average thickness of 0.090" and have forged pulls.
15. Lever trim shall be designed with a breakaway feature to allow trim to freely rotate while remaining securely locked, preventing damage to internal lock components from vandalism by excessive force.
16. Latch bolts shall have a self-lubricating coating that reduces friction and wear. Plated latch bolts are unacceptable.
17. The Exit Protector shall be supplied with a dogging indicator to provide a quick and easy monitoring of the dogging status. The indicator shall be a red LED which lights every 5 seconds to indicate that the dogging mechanism is released and the Exit Protector is secure. The LED shall be visible from 75 feet.
18. Finish: BHMA #626 (US26D)
19. Acceptable Manufacturers:
    a. Von Duprin: 98 Series to match BSD standard

2.5 DOOR CLOSERS

A. General Requirements:
   1. Closers shall be sealed and filled with all-weather fluid. Provide stable hydraulic fluid to withstand a temperature range of 120 degrees F to minus 30 degrees F.
   2. Size closers in compliance with requirements for accessibility for handicapped and recommendations of manufacturer. Provide barrier free and delayed action features as needed. Comply with following maximum opening-force requirements:
      a. Interior Hinged Doors: 5.0 lbs.
      b. Exterior Hinged Doors: 8.5 lbs.
      c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction

B. Surface Closers: ANSI/ BHMA A156.4, Grade 1
   1. Surface mounted closers shall be full rack-and-pinion type with cast iron body. Double heat-treated shaft, full complement bearings, single piece forged piston, chrome silicon steel spring, non-critical screw valves; back check, sweep and latch.
   2. Furnish closers complete with rectangular, non-ferrous covers, necessary brackets and fasteners for top of door surface mounted units.
      a. Finish: BMHA #689
   3. Closer products with any type of pressure relief valve system shall not be acceptable.
   4. Closers shall be ISO 9000 certified. Units shall be stamped with date of manufacturer code.
   5. Non-sized closer to be independent lab tested for 10,000,000 cycles.
   6. Closers shall be non-sized, field adjustable from size 1 to 6 with a "FAST" power adjust speed dial to show spring power size.
   7. Furnish non-sized closers with 1 1/2" diameter piston.
   8. Do not through-bolt if there has been special blocking specified in wood door specification; refer to Section 08210.
   9. Locate closers on interior side of exterior doors and on non-public side of interior doors, unless otherwise specified.
   10. Provide extra-duty arms (EDA) at doors scheduled with parallel arm applications.

11. Provide plates, brackets and special templates when needed for interface with particular header door and wall conditions and adjacent hardware.
12. Closers shall be tested to 100 hours of salt spray test in compliance with ASTM B117; furnish data on request.
13. Acceptable Manufacturers:
    a. LCN: 4040XP Series to match BSD standard

2.6 FLUSHBOLTS

A. Flushbolts: ANSI/ BHMA A156.16
   1. Provide minimum 1/2" diameter rods of brass or stainless steel, with minimum 12" long rods for doors up to 7'-0" in height. Provide longer rods as needed for doors exceeding 7'-0" in height.
   2. Provide dustproof strikes for bottom flushbolt applications, except where special threshold construction provides non-recessed strike for bolt.
   3. Finish: BHMA #630 (US32D)
   4. Acceptable Manufacturers:
      a. Ives: FB458
      b. Rockwood: 555
      c. Trimco: 3917

B. Combination Flushbolts: ANSI/ BHMA A156.16
   1. Provide combination flushbolts using two automatic flushbolts for top and bottom of the door. When active leaf is opened flushbolts are opened. Automatic flushbolts engages each time inactive leaf is closed.
   2. Provide dust-proof strikes for bottom flushbolt applications.
   3. Finish: BHMA #630 (US32D)
   4. Acceptable Manufacturers: (wood doors)
      a. Ives: FB41P
      b. Rockwood: 1945
      c. Trimco: 3815
   5. Acceptable Manufacturers: (hollow metal doors)
      a. Ives: FB31P
      b. Rockwood: 1845
      c. Trimco: 3810

2.7 PUSH PLATES, PULL BARS, AND GRIPS

A. General Requirements: ANSI/ BHMA A156.6
   1. Provide concealed mounting where possible. Where exposed fasteners are used, they shall be countersunk.
   2. Push plates shall be beveled on four edges.
   3. Where applicable plates shall be prepared to receive cylinder locks or thumb turns as scheduled.
   4. Finish: BHMA #630 (US32D)

2.8 DOOR PROTECTION DEVICES

A. General Requirements: ANSI/ BHMA A156.6
   1. Fabricate protection plates (armor, kick, or mop) not more than 2" less than door width on stop side and not more than 2" less than door width on pull side, x height indicated.
   2. Protection plates shall be beveled on four edges.

3. Furnish protection plates for concealed mounting where possible. Where exposed fasteners are used, they shall be countersunk.
4. Metal Plates: Stainless steel
   a. Thickness (US GA): 18 gauge; .050”
5. Finish: BHMA #630 (US32D)

B. Kick Plates:
1. Size: 10”
2. Acceptable Manufacturers:
   a. Trimco: K0050
   b. Rockwood: kick plate

C. Mop Plates:
1. Size: 4”
2. Acceptable Manufacturers:
   a. Trimco: M050
   b. Rockwood: armor plate

2.9 OVERHEAD STOPS AND HOLDERS

A. Concealed Overhead Holders/Stops: ANSI/ BHMA A156.8
1. Description: Low profile heavy-duty extruded brass or bronze holders with shock absorber and no plastic parts
2. Overall channel depth shall not exceed 3/4”.
3. Finish: BHMA #630 (US32D)
4. Acceptable Manufacturers:
   a. GJ: 100 Series
   b. Rixon: Heavy Duty 1 Series

B. Surface Mounted Overhead Holders/Stops: ANSI/ BHMA A156.8
1. Description: Heavy-duty extruded brass, bronze or stainless steel stop/holders with shock absorber and no plastic parts
2. Finish: BHMA #630 (US32D)
3. Acceptable Manufacturers:
   a. GJ: 90 Series
   b. Rixon: Heavy Duty 9 Series

2.10 SEALS AND GASKETS

A. General Requirements: ANSI/ BHMA A156.22
1. Except as otherwise indicated, provide DHSI #105 weatherstripping at each edge of every exterior door leaf.
2. Seals and gasketing manufacturer shall show evidence that they can provide an STC of 30 or more on sealed openings. Evidence shall be provided that this STC, as well as any requirements for smoke gasket can be maintained under industry allowable tolerances for warp (AWI) and plumb (SDI). Evidence shall be provided that the gasket system can meet criteria under the Field Quality Assurance Standards.
   a. Any opening, allowing light to pass the frame perimeter (exclusive of the door bottom) shall be rejected. (U/L 1784)
   b. Gasket that binds the door, requiring more than 15# to release the latch is unacceptable. (NFPA 101)
   c. Filing of strike plates shall be unacceptable. (NFPA 80)

d. To avoid self-adhesive failure, due to stretching during installation self adhesive frame seals shall be inelastic and shall not be subject to stretching. (Failure of a smoke seal voids listing of the opening).
e. Provide DHSI #105 "Cush 'N' Seal".

3. Door Bottoms: Door sweeps used on exterior doors shall be NGP 101V or 100V as listed. Door bottom seals used on interior doors for sound, light transfer, smoke reduction or security shall be DHSI #CS-36, #A-MDB3 or #SSDB3 as selected and detailed in the hardware sets.
4. Meeting Stile Gasket: When a wood or metal astragal is not permitted, due to operation of the hardware or code restrictions, provide a self-adhesive seal at the meeting stiles that does not restrict the opening and closing of the door leafs.
   a. Provide DHSI #SA surface astragal.
   b. Where a mortise astragal can be used on unlabeled wood doors provide DHSI # A-MA.
5. Where positive pressure labeling is required surface applied intumescent, on either the door or frame is unacceptable.
6. Screw-on type weatherstrip on frames is unacceptable.

2.11 THRESHOLDS

A. General Requirements: ANSI/ BHMA A156.21
   1. Except as otherwise indicated provide standard threshold units of type, size and profile as shown or scheduled.
   2. Metal: Extruded aluminum; 6063-T5 alloy
      a. Finish: Clear anodized; BHMA #628 (US27)
   3. Provide thresholds that are 1" wider than depth of frame.
   4. Acceptable Manufacturers:
      a. NGP
      b. Pemko
      c. Reese

2.12 AUXILIARY HARDWARE

A. Silencers: ANSI/ BHMA A156.16
   1. Furnish tamper proof resilient cushions designed to absorb shock and noise at openings without gaskets.
   2. Provide 3 silencers per single door, and 2 for pairs of doors.
   3. Acceptable Manufacturers:
      a. Trimco: 1229A
      b. Rockwood: 608

B. Wall Bumpers: 2 1/2" diameter; 1" nominal projection
   1. Finish: BHMA #626 (US26D)
   2. Acceptable Manufacturers:
      a. Trimco: 1270WV
      b. Rockwood: 403

2.13 ACCESSORY HARDWARE

A. Key Cabinet:
   1. Type: Two tag system with triple cross reference
   2. Capacity: 150% greater than number of door keys needed

3. Provide a key cabinet complete with accessories set up with keys and hooks tagged, keys installed, and index cards completed. Install key cabinet in location as indicated on Drawings or as directed by Owner.
4. Acceptable Manufacturers:
   a. Bommer: BKC Series
   b. Lund: Lund Key Box
   c. Salisbury: Model 1010

B. Electric Strikes: ANSI/ BHMA A156.5, Grade 1
1. Electric strikes shall be listed by UL for fire door accessory and burglary resistance.
2. Strikes shall be for use with mortise locks without deadbolt or cylindrical locks on single door; hollow metal or aluminum frame application.
3. Operation shall be fail-safe or fail-secure as listed.
4. Power Requirements: 24 VDC
5. Finish: BHMA #630 (US32D)
6. Acceptable Manufacturers:
   a. Folger Adam: 310 Series
   b. Schlage: 9000 Series
   c. Von Duprin: 5100 Series

C. Electro-Magnetic Door Holders:
1. Provide floor mounted units to hold door in open position and to release and automatically close under alarm conditions.
2. Electromagnet shall be protected against transients and voltage surges up to 600 volts.
3. Power Requirements: 24 V AC/DC nominal +10% -15% @ .110 amp maximum
4. Acceptable Manufacturers:
   a. LCN – SEM 7800 Series
   b. Rixon: Model 980

2.14 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

A. General Requirements:
1. Meet with Architect and Owner to finalize keying requirements and obtain keying instructions in writing. Keying schedule shall be established in compliance with specific requirements determined in consultation with Owner.
2. Keys and key blanks shall be protected by one or more utility patents. This protection shall extend at least into year 2014.
   a. Cylinders shall incorporate a mechanism to check for patented features on keys.
3. Key system shall be able to provide nationwide geographic exclusivity
4. Cylinders shall be from same manufacturer as locks
5. Provide temporary construction keying system during construction period. Permanent keys shall be furnished to Owner's Representative prior to occupancy. Owner or Owner's Security Agent will void operation of construction keys.

B. Cylinders:
1. Permanent cylinders shall be keyed by manufacturer and configured into sets or subsets, master keyed or great grand master keyed as directed by Owner.
2. Permanent keys and cylinders shall be marked with applicable blind code for identification. These visual key control marks or codes shall not include actual key cuts.
   a. Key and cylinder identification stamping shall be approved by Architect and Owner. Failure to properly comply with these requirements shall be cause for replacement of cylinders and keys involved at no additional cost to Owner.

3. Equip locks and cylinders with patent protected, full size cylinders with six nickel silver finger pins. Provide a minimum of six pins with nickel silver bottom pins. Cylinders shall allow for multiplex master keying, configured to Owner's instructions.

C. Key Material:
1. Provide manufacturer's standard embossed keys of nickel silver to ensure durability. Key Quantity: Furnish keys in following quantities:
   a. Master Keys: 6 per master group
   b. Change Keys:
      (1) Locks Keyed Alike: 4 per set
      (2) Locks Keyed Different: 3 per lock
   c. Key Blanks: 6 per cylinder
   d. Temporary Construction Master Keys: 12 total
2. Deliver end user exclusive permanent key blanks and other security keys directly to Owner's representative from manufacturer by secure courier, return receipt requested. Failure to properly comply with these requirements shall be cause for replacement of cylinders and keys involved at no additional cost to Owner.

D. Acceptable Manufacturers:
1. Locks, Cylinders and Keys: Schlage - Everest Primus and Everest Open patented full size cylinders to match BSD standard key system.

PART 3 EXECUTION

3.1 EXAMINATION

A. Site Verification of Conditions:
1. Examine doors and frames with Installer present for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
2. Proceed with installation only after unsatisfactory conditions have been corrected.
3. Commencement of installation constitutes acceptance of conditions and responsibility for satisfactory performance.

3.2 PREPARATION

A. Surface Preparation:
1. Steel Doors and Frames: Comply with DHI A115 Series
   a. Surface-Applied Door Hardware: Drill and tap doors and frames in compliance with SDI 109
2. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. General Requirements:
1. Install each door hardware item to comply with manufacturers' written instructions using manufacturers supplied fasteners.
2. Securely install finish hardware items in compliance with accepted schedule and templates furnished with hardware.
3. Install mortised items flush with adjacent surfaces.

4. Install locksets, surface mounted closers, and trim after finishing of doors and frames is complete.
   a. Where cutting and fitting is needed to install door hardware onto or into surfaces that are to be painted or finished in another way later, coordinate removal, storage, and reinstallation of door hardware with finishing work.
5. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
6. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in compliance with industry standards.

B. Mounting Heights:
1. Mount door hardware units at heights indicated in following applicable publications, unless otherwise specifically indicated or required to comply with governing regulations:
   a. Steel Doors and Frames: ANSI A250.6
      (1) DHI Publication Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames
      (2) DHI Publication *Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames*
   b. Wood Doors: DHI Publication WDHS-3

C. Door Stops:
1. Door stops shall be furnished for every door leaf. Install floor-mounted or wall-mounted stops, as scheduled. Overhead door holder shall be provided where floor or wall stops cannot be used.
2. Place door stops in such a position that they permit maximum door swing, but do not present a hazard or obstruction. Furnish floor strikes for floor holders of proper height to engage holders of doors.
3. Floor stops shall be installed with risers as needed to accommodate finish flooring materials for proper relationship to door.

D. Thresholds:
1. Set thresholds for exterior and acoustical doors in full bed of sealant in compliance with requirements specified in Division 7.

E. Key Control System:
1. Place keys on markers and hooks in key control system cabinet, as determined by final keying schedule.

3.4 ADJUSTING

A. Initial Adjustment:
1. 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.
2. Adjust electric strikes horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Adjust door closer sweep period so that from an open position of 70 degrees door will take at least 3 seconds to move to a point 3" from latch measured to leading edge of door.

B. Final Adjustment:

1. Return to Project during week prior to Substantial Completion and make final check and adjustment of hardware items.
2. Adjust hardware so doors operate in perfect order. Test and adjust hardware for quiet, smooth operation, free of sticking, binding, or rattling. Adjust closers for proper, smooth operation.
3. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

C. Six Month Adjustment:
1. Approximately six months after Date of Substantial Completion, installer shall perform following:
   a. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware and electrified door hardware.
   b. Consult with, and instruct, Owner's personnel on recommended maintenance procedures.
   c. Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation.

3.5 CLEANING

A. Exposed hardware shall be carefully cleaned by methods not injurious to finish, immediately preceding occupancy. Replace defective, damaged, or missing hardware.

B. Clean adjacent surfaces soiled by hardware installation.

C. Clean operating items as needed to restore proper function and finish.

3.6 DEMONSTRATION

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

3.7 PROTECTION

A. Provide final protection and maintain conditions that ensure door hardware shall be without damage or deterioration at time of Substantial Completion.

B. Protect door hardware items from abuse, corrosion and other damage until Owner accepts Project as complete.

3.8 DOOR HARDWARE SCHEDULE

Manufacturer List

Code	**Name**
AB	ABH Manufacturing Inc.
BY	By Others
DM	Dorma Door Controls
LC	LCN Closers
NA	National Guard

PR	Precision
SC	Schlage
SDC	Security Door Controls
ST	Stanley
TR	Trimco
VO	Von Duprin

Option List

Code	Description
17	17 LEVER DESIGN
BF	BARRIER FREE OPENING FORCE
CD	CYLINDER DOGGING
B4E	BEVELED 4 EDGES
CSK	COUNTER SINKING
ICX	ICX CONST. CORE
LBR	LESS BOTTOM ROD
10-025	STRIKE-ANSI, 1 3/4" DRS., 1 1/4" X 4 7/8
XQ11-948	Cam for Von Duprin Cyl. Dogging (IC)
1/4-20 SSMS/EA	STAINLESS MACH SCREWS/EXPAN ANC.

Finish List

Code	Description
AL	Aluminum
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
626W	Weatherized Satin Chrome
GREY	Grey
SP28	Lacquer Sprayed Aluminum
BLACK	Black
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull

Hardware Sets

SET #01 - Exterior

Doors: 007

1	Continuous Hinge	661HD UL 83"	AL	ST
1	Exit Device	CD 98EO	US32D	VO
1	Cylinder Core	20-740 as REQ'D	626	SC
1	Mortise Cylinder (Dogging)	20-061 ICX XQ11-948	626	SC
1	Closer	4040 XP SCUSH	AL	LC
1	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
1	Door Position Switch	MC-4		SDC
1	Gasketing	700 NA @ Head & Jambs		NA
1	Drip Cap	16 A - 4" ODW		NA
1	Door Sweep	200 NA		NA
1	Threshold	896 N 1/4-20 SSMS/EA	AL	NA

NOTE: Coordinate wiring with Related Trades.

SET #02 - Exterior Mech

Doors: 137

2	Continuous Hinge	661HD UL	AL	ST
2	Flush Bolts	3917	626	TR
1	Mortise Lockset	L9080 17 Less OS Trim	US32D	SC
1	Flush Pull	111C	US32D	TR
1	Cylinder Core	20-740 as REQ'D	626	SC
1	Mortise Cylinder	20-061 ICX	626	SC
2	Closers	4040 XP SHCUSH	AL	LC
2	Door Position Switch	MC-4		SDC
1	Gasketing	700 NA @ Head & Jambs		NA
1	Astragal	158NA		NA
1	Drip Cap	16 A - 4" ODW		NA
2	Door Sweep	200 NA		NA
1	Saddle Threshold	425 1/4-20 SSMS/EA	AL	NA

NOTE: Coordinate wiring with Related Trades.

SET #03 - Exterior Pair

Doors: 155A, 155B

2	Continuous Hinge	661HD UL	AL	ST
1	Mullion	KR4954	SP28	VO

1	Exit Device	CD 98EO	US32D	VO
1	Exit Device	CD 98L-NL x 996L-NL-R&V 17	US32D	VO
4	Cylinder Core	20-740 as REQ'D	626	SC
1	Rim Cylinder (Trim)	20-057 ICX	626	SC
1	Mortise Cylinder	20-061 ICX	626	SC
2	Mortise Cylinder (Dogging)	20-061 ICX XQ11-948	626	SC
2	Closer	4040 XP SCUSH	AL	LC
2	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
2	Door Position Switch	MC-4		SDC
1	Gasketing	700 NA @ Head & Jambs		NA
1	Mullion Seal	5100N-86 86"		NA
1	Astragal Set	140 PA SET		NA
2	Door Sweep	200 NA		NA
1	Threshold	896 N 1/4-20 SSMS/EA	AL	NA

NOTE: Coordinate wiring with Related Trades.

SET #04 - Exterior Pair

Doors: 164

2	Continuous Hinge	661HD UL	AL	ST
1	Mullion	KR4954	SP28	VO
1	Exit Device	CD 98L x 996L-R&V 17	US32D	VO
1	Exit Device	CD 98L-DT x 996L-DT 17		
US32DS32D		VO		
4	Cylinder Core	20-740 as REQ'D	626	SC
1	Rim Cylinder (Trim)	20-057 ICX	626	SC
1	Mortise Cylinder	20-061 ICX	626	SC
2	Mortise Cylinder (Dogging)	20-061 ICX XQ11-948	626	SC
2	Closer	4040 XP SCUSH	AL	LC
2	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
2	Door Position Switch	MC-4		SDC
1	Gasketing	700 NA @ Head & Jambs		NA
1	Mullion Seal	5100N-86 86"		NA
1	Astragal Set	140 PA SET		NA
2	Door Sweep	200 NA		NA
1	Threshold	896 N 1/4-20 SSMS/EA	AL	NA

NOTE: Coordinate wiring with Related Trades.

SET #05 - Vestibule

Doors: 128, 128B, 152A

3	Hinges	FBB179 4 ½ x 4 ½ NRP	626	ST
1	Lockset	ND80TD SPA 10-025	626	SC
1	Cylinder Core	20-740 as REQ'D	626	SC

1	Electric Strike	6100 series DMS EB	630	VO
1	Desktop Console	DTMO1 (Door 128B)	PTD	SDC
1	Closer	4040 XP (CS arm @ 152A)	AL	LC
1	Wall Bumper	1270WV	630	TR
1	Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
1	Power Supply	As REQ'D		VD
1	Door Position Switch	MC-4		SDC
1	Gasketing	2525 @ Head & Jambs		NA
1	Door Sweep	200 NA		NA
1	Wall Phone	BY OTHERS		BY

NOTE: Operation: Door normally closed and locked. Granted entry via the A- phone to call and request entry. A-phone releases electric strike for entry at Doors 128 & 152A. Separate push button located at reception desk releases electric strike allowing entry for Door 128B. Egress always allowed. Coordinate wiring with Related Trades.

SET #06 - Classroom / Office / Conf

Doors: 118, 119, 126, 127, 121

3	Hinges	FBB179 4 1/2 X 4 1/2 NRP	US26D	ST
1	Classroom Sec Lockset	ND75TD SPA 10-025	626	SC
2	Cylinder Core	20-740 as REQ'D	626	SC
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #07

Doors: 128A, 128B

3	Hinges	FBB179 4 1/2 X 4 1/2 NRP	US26D	ST
1	Classroom Sec Lockset	ND75TD SPA 10-025	626	SC
2	Cylinder Core	20-740 as REQ'D	626	SC
1	Closer	4040 XP EDA	AL	LC
1	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
1	Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #08 - Office

Doors: 122, 123, 124, 125, 129,130, 131, 132, 133, 135

3	Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1	Classroom Lockset	ND70TD SPA 10-025	626	SC

1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #09 - Closet

Doors: 127A

3	Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1	Storeroom Lockset	ND80TD SPA 10-025	626	SC
1	Cylinder Core	20-740 as REQ'D	626	SC
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #10 - Closet

Doors: 121A

6	Hinges	FBB179 4 1/2 X 4 1/2 NRP	US26D	ST
2	Flush Bolt	3917	626	TR
1	Deadlock (Classroom)	L463T	626	SC
1	Cylinder Core	20-740 as REQ'D	626	SC
2	Edge Pull	1062	626	TR
2	Wall Bumper	1270WV	630	TR
1	Dustproof Strike	3910	626	TR
2	Door Silencers	1229A	GREY	TR

SET #11 - Closet

Doors: 134

6	Hinges	FBB179 4 1/2 X 4 1/2 NRP	US26D	ST
2	Flush Bolt	3917	626	TR
1	Deadlock (Classroom)	L463T	626	SC
1	Cylinder Core	20-740 as REQ'D	626	SC
2	Edge Pull	1062	626	TR
2	Overhead Stop	4420 Series	US32D	AB
1	Dustproof Strike	3910	626	TR
2	Door Silencers	1229A	GREY	TR

SET #12 - Lav

Doors: 136, 154A, 154B

3	Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1	Privacy Set	ND40S SPA 10-025	626	SC
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #13

Doors: 153, 154

6	Hinges	FBB168 5 X 4 1/2	US26D	ST
1	Fire Exit Device	9827EO-F LBR	US32D	VO
1	Fire Exit Device	9827L-BE-F x 996L-R&V-BE 17 LBR	US32D	VO
2	Magnetic Holder	EM 504	689	DM
2	Closer	4040 XP EDA	AL	LC
2	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
2	Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1	Gasketing	5050C Head & Jambs		NA
1	Astragal Set	115 NA SET		NA

NOTE: Coordinate wiring with Related Trades.

SET #14 - Cafe

Doors: 155

6	Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1	Set Auto Flush Bolts	3815L X 3815L	626	TR
1	Classroom Sec Lockset	ND75TD SPA 10-025	626	SC
2	Cylinder Core	20-740 as REQ'D	626	SC
2	Magnetic Holder	EM 504	689	DM
1	Coordinator	3094	BLACK	TR
2	Closer	4040 XP REG	AL	LC
2	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
2	Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1	Dustproof Strike	3910	626	TR
1	Gasketing	5050C Head & Jambs		NA

NOTE: Coordinate wiring with Related Trades.

SET #15 - Kitchen

Doors: 156A, 156B

3	Hinges	FBB179 4 1/2 X 4 1/2 NRP	US26D	ST
1	Deadlock	L460T	626	SC
1	Cylinder Core	20-740 as REQ'D	626	SC
1	Pull Plate	1017-3B	630	TR
1	Push Plate	1001-9	630	TR
1	Closer	4040 XP EDA	AL	LC
1	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
1	Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1	Wall Bumper	1270WV	630	TR
3	Door Silencers	1229A	GREY	TR

SET #16 – Lobby Pair

Doors: 152

2	Continuous Hinges	661HD UL	628	ST
1	Mullion	KR4954	SP68	VO
1	Exit Device	CD 98L x 996L-R&V 17	US32D	VO
1	Exit Device	CD 98L-DT x 996L-DT 17	US32D	VO
4	Cylinder Cores	20-740 as REQ'D	626	SC
1	Rim Cylinder (Trim)	20-057 ICX	626	SC
1	Mortise Cylinder	20-061 ICX	626	SC
2	Mortise Cylinders (Dogging)	20-061 ICX	626	SC
2	Closers	4040 XP SCUSH	AL	LC
2	Kick Plate	K0050 10" x 2" LDW B4E CSK	630	TR
2	Door Position Switches	MC-4		SDC
1	Gasketing	700NA@ Heads & Jambs		NA
1	Mullion Seal	5100N-86 86”		NA

NOTE: Coordinate wiring with related Trades.

SET #17 - Exterior Gate

Doors: 008

1	Exit Device	2101	626W	PR

NOTE: Balance of hardware by gate manufacture. Coordinate Exit Device mounting with gate manufacture.

END OF SECTION

SECTION 260606

AUTOMATIC TRANSFER SWITCHES

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. Extent of A.T.S. work is indicated by drawings, schedules and specifications.

B. Types of A.T.S. specified in this section include the following:

Automatic Transfer Switches

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's data on A.T.S. and components.

B. Shop Drawings: Submit dimensioned drawings of automatic transfer switches and automatic transfer switches, including accessories, but not limited to the following:

1. System schematic diagram showing all required conduit, wiring interconnections, sizes and quantities.

2. Complete conduit, electric power, control schematics and flow diagrams.

3. Ladder type schematic electrical diagrams with legend identifying all devices on diagrams.

PART 2 – PRODUCTS

2.1 EMERGENCY POWER SYSTEM

A. Furnish A.T.S. and components of types, ratings, and electrical characteristics indicated, consisting of, but not limited to, power transfer module, control module and equipment housing with all required interconnections.

2.2 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide products of one of the following:

Automatic Switch Company (ASCO)

Florham Park, New Jersey 07932

Russelectric, Inc.

South Short Industrial Park

Hingham, MA. 02043

B. These specifications are designed and written around the characteristics of ASCO Automatic Transfer Switches and represent the minimum requirements for all other listed manufacturers.

2.3 AUTOMATIC TRANSFER SWITCHES

A. The automatic transfer switches shall consist of a power transfer module and a control module, interconnected to provide a complete automatic power transfer operation. The switch shall be mechanically held and electrically operated by a single solenoid mechanism energized from the source to which the load is to be transferred. The switch shall be rated for continuous duty and be inherently

double throw. The switch shall be mechanically interlocked to ensure only one of two positions--normal or emergency.

B. The automatic transfer switches shall be suitable for use with an engine-driven generator source.

C. All main contacts shall be of silver composition. The operating transfer time in either direction shall not exceed one-sixth (1/6) of a second.

D. All contacts, coils, springs and control elements shall be conveniently removable from the front of the transfer switch without major disassembly or disconnection of power conductors.

E. The control module shall be supplied with a protective cover and be mounted separately from the transfer switch for ease of maintenance. Sensing and control logic shall be solid-state and mounted on plug-in printed circuit boards. Printed circuit boards shall be keyed to prevent incorrect installation. Interfacing relays shall be industrial control grade plug-in type with dust covers.

2.4 COMPLIANCE WITH CODES AND STANDARDS

A. The automatic transfer switch and the bypass-isolation switch shall conform to the current requirements of:

1. Underwriters Laboratories UL-1008

2. National Electrical Code Articles 517, 700, 701 and 702.

3. National Fire Protection Association 99 and 110.

4. National Electrical Manufacturer's Association Standard ICS-2-447.

B. Automatic transfer switches utilizing components of molded case circuit breakers, contactors or parts thereof which have not been intended for continuous duty or repetitive load transfer switching shall not be acceptable.

C. Transfer switches rated 400 amperes and less shall be suitable for 100 percent tungsten-filament lamp load.

D. The automatic transfer switch shall be rated to withstand the RMS symmetrical short circuit current available at the automatic transfer switch terminals with the type of overcurrent protection and voltage as indicated on the single line riser diagram.

2.5 ACCESSORIES

A. Provide accessory devices as follows:

1. Two (2) N.O. and two (2) N.C. auxiliary contacts.

2. Solid Neutral (ASCO Accessory No. 22).

3. Overlapping neutral transfer contacts (ASCO Accessory No. 28)

4. In-Phase Monitor (ASCO Accessory No. 27)

5. Engine Exerciser (ASCO Accessory No. 11C) Install on one (1) switch only.

2.6 SWITCH TYPE

A. The automatic transfer switches and controls shall be mounted in a NEMA Type 1, General Purpose enclosure. Switch types shall be as follows:

1. Automatic Transfer Switch: ASCO Type 300

PART 3 – EXECUTION

3.1 INSTALLATION OF EMERGENCY POWER SYSTEM

A. Install Emergency Power System as indicated in contract documents, and in accordance with equipment manufacturer's written instructions, and with recognized industry practices, to ensure that the system equipment complies with requirements. Comply with requirements of NEC and applicable portions of NECA's "Standard of Installation" pertaining to general electric installation practices.

B. The Electrical Contractor shall furnish and install all power wiring as indicated and all control wiring as required by the automatic transfer switch and engine generator manufacturers.

3.2 GROUNDING

A. Provide equipment grounding connections, sufficiently tight to assure permanent and effective ground, for Optional Emergency Power System equipment as indicated in contract documents.

3.3 FIELD QUALITY CONTROL

A. Upon completion of installation of Emergency Power System equipment, and after building circuitry has been energized with normal power source, test system to demonstrate capability and compliance with requirements. Where possible, correct malfunctioning units at the site, then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.

3.4 OPERATION, MAINTENANCE, INSTRUCTION MANUALS

A. Provide three (3) operation and maintenance instruction manuals, including spare parts list, to the Owner.

END OF SECTION 260606

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DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Ornamental picket fencing and accessories.
2. Ornamental picket swing gates and hardware.

1.3 SUBMITTALS

A. Comply with requirements of SECTION 01300 - Submittals and as modified below.

B. Product Data: Submit manufacturer's catalogue cuts, technical literature, and other data indicating compliance with specified requirement and options.

C. Shop Drawings: Submit drawings showing layout of fence and gates with dimensions, details and finishes of component, accessories and post foundations.

D. Contract Closeout Submittals: Comply with requirements of SECTION 01700, including submission of operating and maintenance instructions as item in "General Construction Instructions" manual described in that section.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Minimum of 5 years of experience manufacturing ornamental picket fencing.
2. The fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.

1.5 WARRANTY

A. Special Warranty: Provide manufacturer's standard limited warranty that its ornamental fence system is free from defects in material and workmanship including cracking, peeling, blistering and corroding for a period of 20 years from date of purchase.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated below or comparable product by one of the following:

1. "Montage II Ornamental Picket Fence, Majestic design" by Ameristar Fence Products, www.Ameristarfence.com.

2.2 ORNAMENTAL PICKET FENCE

A. Posts and Panels: Galvanized square steel tubular members manufactured per ASTM A653/A653M with 45,000 psi yield strength and hot-dipped G-90 zinc coating of 0.90 oz./ft^{2}minimum.

B. Pickets: 1" square x 14 gauge steel tubular members.

C. Rails: 1.75" x 1.75"x105 square tubular members. [Provide two rails at the top and one rail at the bottom].

D. Fence and Gate Post Sizing: Refer to table below.

Minimum Post Sizes			
Fence Posts	Panel Height		
2-1/2" x 12 Ga.	Up to & Including 6' Height		
3" x 12 Ga.	Over 6' Up to & Including 8' Height		
Gate Leaf	Gate Height		
	Up to & Including 4'	Over 4' Up to & Incl.6'	Over 6' Up to & Incl. 8'
Up to 4'	2-1/2" x 12 Ga.	3" x 12 Ga.	3" x 12 Ga.
4'1" to 6'	3" x 12Ga.	4" x 11 Ga.	4" x 11 Ga.
6'1" to 8'	3" x 12 Ga.	4" x 11 Ga.	6" x 3/16"
8'1" to 10'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
10'1" to 12'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
12'1" to 14'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
14'1" to 16'	6" x 3/16"	6" x 3/16"	6" x 3/16"

E. Finish: Panels and posts to be coated through an inline electrodeposition coating process consisting of a multi-stage pretreatment/wash (with zinc phosphate), followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The coated panels and posts to meet the performance requirements for each quality characteristic shown in table below. Requirements meet or exceed the coating performance criteria of ASTM F2408.

Table 2 – Coating Performance Requirements		
Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 1,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822 D2244, D523 (60˚ Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

F. Fence color: Black.

2.3 FABRICATION

A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.

B. Insert pickets into the pre-punched holes in the rails and align to standard spacing. Bracing: Diagonal adjustable length truss rods provided on gates to prevent sag.

C. Swing gates fabrication: Use 1.75" x 14ga Forerunner double channel rail, 2" sq. x 11ga. gate ends, and 1" sq. x 14ga. pickets. Gates that exceed 6' in width are to have a 1.75" sq. x 14ga. intermediate upright. All rail and upright intersections are to be joined by welding. All picket and rail intersections shall also be joined by welding. Gusset plates to be welded at each upright to rail intersection.

D. Gate Hardware:

1. Panic Latch: Provide manufacturer fabricated panic bar or paddle for gates specified on plan. Panic hardware to be coated to meet ASTM F2408.

2. Brackets: Fabricated of high strength stainless steel with tamper-proof fasteners.

3. Hinges: Structurally capable of supporting gate leaf and allow opening and closing without binding. Non-lift-off type hinge design permits gate to swing 180°.

4. Latch: Capable of retaining gate in closed position and having provision for padlock.

5. Keeper: Keeper provided for each gate leaf over 5 ft. wide, consisting of mechanical device for securing free end of gate when in full open position.

6. Double Gates: Drop rod provided to hold inactive leaf. Gate stop pipe provided to engage center drop rod. Locking device and padlock eyes provided as integral part of latch, requiring 1 padlock for locking both gate leaves.

2.4 ACCESSORIES

A. Concrete: Minimum 28 day compressive strength of 3000 psi.

B. Flanged Posts: Flange type base plates with 4 holes for surface mounting of posts provided where indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Verification of Conditions (by Installer): Examine conditions under which ornamental metal fences and gates are to be installed and notify Prime Contractor in writing of any conditions detrimental to proper and timely installation. Do not proceed with installation until unsatisfactory conditions have been corrected in manner acceptable to Installer.

1. Verify areas to receive fencing are completed to final grades and elevations.
2. Ensure property lines and legal boundaries of work are clearly established.

B. Lay out fence line in accordance with the construction plans.

3.2 FENCE INSTALLATION

A. Install fence in accordance with manufacturer's instructions.

B. Installing posts and panels: Check each post for vertical and top alignment, and maintain in position during placement and finishing operation. Space posts according to submitted shop drawings. For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels are to be attached to posts with brackets supplied by the manufacturer.

C. Setting Posts: Drill hole in firm, undisturbed or compacted soil. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads. Set post bottom 36" below surface when in firm, undisturbed soil. Place concrete around post in continuous pour. Trowel finish around posts and slope to direct water away from posts.

D. Gate Installation: Install gates plumb, level, and secure for full opening without interference. Attach hardware by means which will prevent unauthorized removal. Adjust hardware for smooth operation. Gates are to be constructed as shown on approved shop drawings and per manufacturer’s recommendations. Set keepers, stops and sleeves into concrete.

E. Accessories: Install post caps and other accessories securely and to be vandal-resistant.

3.3 FENCE INSTALLATION MAINTENANCE

A. When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching

fence color. Manufacturer provided paint is to be used to prime and finish exposed surfaces; use paint pens to prevent overspray.

3.4 CLEANING

A. Clean the jobsite of excess materials; remove post-hole excavated soil. Smooth grade and seed and mulch exposed soil.

END OF SECTION

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