

ADDENDUM NO. 1

Date: October 2, 2020

Project Name: WCU Energy Production Facility

Project No.: 103609

SCO ID: 17-17729-02A

The following clarifications, amendments, additions, deletions, revisions, and modifications are hereby made a part of the Contract Documents and change the original documents only in the manner and to the extent stated below.

Bid Date: The bid date is Extended to October 20, 2020 at 3:00 PM.

SPECIFICATIONS

1. Specification 10 51 13 METAL LOCKERS: Scranton Duralife Lockers and Tufftec Bench are acceptable substitutions for the specified basis-of-design metal lockers provided that the HDPE lockers and benches pass NFPA 286 testing.
2. Specification 07 42 13 13 FORMED METAL WALL PANELS: a complete wall system from same manufacturer is desired which includes the insulated core metal backup wall panel identified in specification section 07 42 17 section 2.02. Provide warranty for complete wall system.
3. Specification 04 72 00 CAST STONE MASONRY Section 2.01.A.1: The following manufacturers are added as approved manufacturers:
 - a. Bassco Caststone, 18786 Carters Circle, Elkmont AL 35620, 256-732-2228
 - b. RockCast Architectural Cast Stone
4. Specification 09 67 23 RESINOUS FLOORING Section 2.03.A.1: The following manufacturers are added as approved manufacturers:
 - a. Tnemec Company
5. Specification 03 05 15 CRYSTALLINE WATERPROOFING ADMIXTURE section 2.2.A.5: The following manufacturers are added as approved manufacturers:
 - a. Penetron USA
6. Add section 22 13 19 WASTE AND VENT PIPING SPECIALTIES- Attached
7. Add section 10 44 16 – FIRE EXTINGUISHERS - Attached
8. Replace section 08 71 00 – DOOR HARDWARE - Attached
9. Specification section 22 15 19 Part 2.02 A shall be modified as follows:
 - a. Manufacturers: subject to compliance with requirements, provide products by one of the following:
 - i. Atlas Copco.
 - ii. CompAir, Ltd.
 - iii. Gardner Denver
 - iv. **Champion.**
10. Specification section 48 52 05 Part 2.01 shall be modified as follows:

- a. Steam generator shall be of new manufacture by one of the following:
 - i. Babcock & Wilcox.
 - ii. Foster Wheeler.
 - iii. Hurst.
 - iv. Cleaver Brooks.
 - v. Indeck.
 - vi. Rentech.
 - vii. Superior.
 - viii. Victory
 - ix. Engineer-approved equal.
- 11. Owner requested change of Condensate Flowmeter type and model. Condensate Flowmeters are now Flexim Ultrasonic.
- 12. Owner requested change of Make-Up Flowmeter type and model. Make-Up Flowmeter is now Flexim Ultrasonic.
- 13. Updated Section 40 90 00 – 1.07.A.2.b to reflect the communication of owner-requested flowmeter data to BMS.

1.07 COMMUNICATIONS

- ▲ A. Communications connect system package controllers and other devices to the BOP control system for supervisory control and monitoring. The communications media will be the required type (CAT 5e, Coax, Twisted Pair, Fiber Optic, etc.) for the specific communication link.
 - 1. Ethernet IP
 - a. The most common protocol used is Ethernet IP. This protocol shall be used for communications between electrical equipment and the PCS.
 - 2. Modbus
 - a. Modbus TCP is the protocol used to interface the BOP control system to other PLCs and vendor provided control panels.
 - b. A Modbus TCP/IP connection to the BMS shall be made to communicate these specific Owner-Requested flowmeter I/O points:
 - (1) Condensate Return Flowmeters (2)
 - (2) Make-Up Water Flowmeter (1)
 - (3) Main Steam Flowmeters (3)
 - (a) Provided by Boiler Vendor
 - (b) McCrometer V-Cone Style
 - (4) Natural Gas Flowmeters (3)

DRAWINGS

- 1. Sheet A-414, Detail 2: where annotated 'SEE DETAIL 7&4/A-581 FOR RAILING' change to 'SEE DETAIL 10&11/A-581'.
- 2. In lieu of the specified as-cast formed concrete surface finish CSC 3 to the exposed surfaces of the outdoor retaining wall identified on drawing S-104, provide 6 inch nominal natural rubble stone veneer per the attached example specification 04 4301 STONE MASONRY VENEER. This stone veneer is to more closely match the recently completed installation at the Main Campus Entrance walls (not the STEM building). Mortar joints are to be standard mix of type S mortar and masonry sand pointed and recessed back approximately 1 to 1-1/2 inches from the

face of stone to mimic a dry-stack installation. Please refer to photos below for desired aesthetic.



a.



b.

3. Sheet A-550, details 5&7: Provide 16 gauge vertically installed 1" metal hat channels at 16" O.C. between the CMU wall and insulated composite metal backup panel. The metal furring is to be anchored to the CMU wall and the insulated composite metal backup panels are then anchored to the furring.
4. Alternative Door Hardware:
 - a. Von Duprin exit devices either the 99 Rim series or the 33 Rim series
 - b. LCN Door Closers
 - c. Corbin Russwin ML 2000 Locksets with LWM trim
5. The Exterior Expansion Joint Cover Assemblies spec section 079513.16, 2.03-B calls for 'seal rubber anchored to surface mounted frames', by Spring Thunder, for the exterior curtain wall joint cover, but detail 2/A-592 shows an Emseal pre-compressed foam seal for this joint. Which is correct?
 - a. Response: The intent is to utilize the Emseal Colorseal pre-compressed wall expansion joint as the primary watertight seal for all locations where the new construction abuts the existing building to maintain continuity of seal and thermal insulation. The Spring Thunder joint STCW1 will not be used and is removed from the specification.

6. Wall Type S3AA is a Shaft Wall which we have several of these highlighted on the attached Snip It. Please clarify if the walls listed here are the correct wall type. If not, please let us know which wall types are correct.
 - a. Wall Type S3AA needs to be separated into two different wall types, regular partition and shaft wall partition. The intent is to provide a continuous STC 50 regular partition (QuietRock PGD-01-10-213, test number NOAL 17-0459), however, there are several locations where a shaft wall system is required due to partition construction abutting structural or plumbing elements. In these locations where STC 50 shaft wall partition is required provide UL Des U415, System B or U438, test number RAL-OT-04-019 based on 4" C-H studs 25 gauge with 3" mineral fiber insulation. Refer to sheet A-500 for additional information regarding locations of required sound ratings.
7. There is a stair system shown on sheet A-105 between CL's 4 & 5 with the landing adjacent to CL G. The architect drawing directs us to the structural sheets, however, this stair does not appear to be located on the structural set. There is a section at the existing steam vault tunnel on sheet S-405 (detail A) but no stair is shown. Please clarify.
 - a. Please ignore this reference to structural sheets and instead refer to details 8,9, & 10 on sheet A-411.
8. Per Specs (084113, 084423, 088000) Hurricane Impact Resistance is required. Cullowhee, NC/WCU project itself, is not located in a 'Hurricane Impact Zone'. Is hurricane impact rating required?
 - a. Since Cullowhee is not within a hurricane-prone region then windborne-debris impact resistance is not required.
9. Regarding the entrance ramp railing to the 1st floor vestibule (refer to A-414-0), per section 2/A-414-0 (railing adjacent to the building), it states to see Detail 7 & 4/A-581, which makes this portion a glass handrail. But Section 3 (along the retaining wall) & Detail 4/A-414 refers to Details 10 & 11/A-581, shows this portion as stainless steel handrail. Please clarify the intent as it appears the current design utilizes 2 types of handrail along this entrance ramp.
 - a. The intent is for both railings to be stainless steel. Regarding sheet A-414, Detail 2: where annotated 'SEE DETAIL 7&4/A-581 FOR RAILING' change to 'SEE DETAIL 10&11/A-581'.
10. On sheet A-201 the louvers tagged as L1, L2, L3, and L4 are to be louver type L01 and the louver tagged as L5 is to be louver type L02 as scheduled on sheet A-671. Furthermore, in specification 08 91 19 FIXED LOUVERS the basis-of-design product ELF40V by Ruskin Company will only apply to louver L01. The basis-of-design product for all other louvers is to be ELF375DX by Ruskin Company or approved equal with minimum 50% free area.
11. On Sheet A-104, in the First Floor Vestibule (Room 101) they are calling for a brick veneer to be adhered to plywood. Brick veneer is also shown at the west jamb condition of opening 101A as detailed per 7/A-623. While this condition is detailed as noted above, the Room Finish Schedule on A-701 specifies the west wall to receive a painting finish and makes no mention of interior brick veneer being required at this location. Please clarify the full extent of the brick veneer intended for this wall including wall height and material desired.
 - a. The extent of the thin brick veneer is from the lower level ground floor slab-on-grade up to underside of roof deck. Refer to wall section 6 on A-311 and details 1&2 on A-552. This is approximately 38 foot tall and extends 35 foot long on lower level and 28 foot long on upper level. The thin brick is not to be painted but rather to match the full size brick identified in specification 04 21 13 BRICK MASONRY.

12. Detail B on Sheet S-102 shows steps and a landing going into the South Stair tower, however, this condition is not shown on architectural floor plan (no door shown either). Please clarify the intent for this apparent opening and confirm it's necessary.
 - a. This is egress door 204C and it is visible on details 3/F-101, 2/F-102, 1&3/A-202, and 8/A-412. Provide with stainless steel pipe guardrails and handrails.
13. The door schedule page A-601-0 has incomplete/missing information. Frame material is missing from most of the openings. Please specify frame material for each opening. Also, the frame type (1.1) states a 2 inch head but the detail page A-622-0 has a 4" head listed on detail 1/A-622. Please clarify if there is to be any 4" jamb heads on this project. Door schedule also refers to EX door numbers as existing to remain doors in the legend. Are these also existing frames? Please clarify.
 - a. EX doors are existing frames and there is no scope for existing doors other than to lock and secure them. These doors will be removed from the schedule. It is desired for all doors in masonry walls to have 4" jamb heads. This includes the following doors: 103A, 104A, 113B, 113C, 114A, 115A, 204C, 206B, 212B, 214B, and 301A. All hollow metal (HM) doors are to have hollow metal (HM) frames. All hollow metal doors and frames are to be painted in accordance with Protective Coating System (PCS) A-1. All aluminum and glass (AL) doors are to have aluminum (AL) frames.
14. Regarding the concrete plinth note on A-104, modify as follows: ...BOILER PLATE). INSTALL PER EP-1/S-011 AND REINFORCE WITH #5@10" EW TOP. FINAL SIZE AND...
15. Reference Drawing M-101-0. A motorized 6'x10' damper shall be provided, mounted on the back of the louver near column B2. This is the damper referenced in the controls points list on Drawing M-613-0.
16. Drawing M-502
 - a. Delete detail number 2, relating to the existing gas metering station demolition and associated note indicating temporary metering station. This metering station has already been relocated.
17. Drawing MS102
 - a. Delete demolition associated with keyed note 3 and natural gas metering station.
18. Drawing MS103
 - a. Delete scope associated with new natural gas metering station and upstream piping. new piping between metering station and new energy production facility shall remain.

BIDDING QUESTIONS AND RESPONSES

1. The bid advertisement notes a project start of December 2020 and a project completion on June 2022. project. Please clarify the project duration and provide clear distinction whether the end date is either the actual project completion (GC demobilize completely) date or simply the substantial completion date.
 - a. **The project duration is 547 calendar days from the Notice to proceed to substantial completion.**
2. Will you please confirm whether there are Liquidated Damages associated with this project and if so provide the amount per day?
 - a. **Liquidated damages for this project will be set at \$1,000/day.**
3. The bid form lists 5 alternates whereas 01 23 00 only lists 4. Please clarify

- a. Add 3.01 E Alternate No. 5 Additive bid for temporary steam line scope. Add alternate includes temporary steam and condensate as indicated on the mechanical drawings.
4. In reviewing spec section 31 20 50, it appears to define the excavation classification as “classified” considering rock encountered (greater than 2 CY’s) will be paid via unit price (per the unit allowance noted in 01 21 00). Please confirm.
 - a. This is correct, but the allowance must be carried in the bid and adjustments will be made based on actual conditions
5. Will there be an asphalt paving spec issued, or shall we base the design per the detail on C501?
 - a. Use detail provided
6. Can you confirm who the purchaser of the Building Permit is? GC, owner or not required?
 - a. Refer to Article 10
7. Can you confirm whether Builder’s Risk insurance is required and if so who’s carries the cost?
 - a. Refer to Article 34
8. It appears there is no Fire Protection specification section. Please clarify.
 - a. There are no sprinklers in this project
9. It appears there is no Fire Protection Specialties (fire extinguishers) specification. Please clarify.
 - a. Section 10 44 16 is included in this addenda
10. There are two unit prices identified on the bid form and in the allowance specification (01 21 00), however, there is no unit price specification. Please clarify.
 - a. Price is in \$/Cubic yard.
11. Plan sheet S-004 says in Notes 1B, 2A, and 3A that the contractor shall retain a third party special inspections agency, structural testing agency, and design professional for structural observations. Is this correct, that the contractor will have to pay for these, or will the owner be paying for these?
 - a. Third party inspections will be provided by the owner. Retest/reinspection costs will be paid by the contractor.
12. Spec section 312050, Site Preparation and Earthwork, 2.01-D.2 defines rock excavation as materials that cannot be removed without drilling and blasting.
 - a. Would rock blasting even be permitted on campus, especially so close to the steam plant?
Blasting will not be permitted.
 - b. Could removal with a hydraulic rock hammer on a track hoe be included under the definition of the rock classification?
Yes, that would be considered systematic drilling.
13. The large allowance listed for rock removal, 5,250 cy, could cause huge differences in the bids, depending on unit prices used. Could this volume in the allowance be reduced so this item will be less of a factor in determining the low bidder?
14. Please confirm the site fill allowance referenced on the bid form and within the allowance
 - a. Provide the requested allowance in the bid.
15. specification refers to replacement only of unsuitable materials with engineered fill (as defined by 31 20 50).
 - a. Confirmed
16. For the rock allowance, please clarify if this should be figured as mass rock removal, or trench rock removal, or specify and amount of each. The costs are typically significantly different.
 - a. We are expecting mass rock removal during excavation for foundations for new building.
17. Division 051200 Structural Steel Under Section “Shop-Protective Coating” for surface preparation refers us to Division 099000. Within this division per A-1 VOC Chart it requires us

to prep ALL structural steel with SP-6 blast cleaning and standard prime. Please confirm this is the correct intent. SP-6 blast cleaning is usually performed for high performance coatings using epoxy primer and finish paints. Please review and advise if SP-6 blast cleaning is required for all structural steel as this will increase the cost dramatically.

- a. **SSPC-SP6 is required for all structural steel per the noted coating system A-1 which is in line with manufacturer's requirements for many of the materials listed.**

18. We don't see any specification information for plumbing items TD, FCO, Oil Interceptor, FD, FS, and Roof Drain and roof Drain Leader. Please provide

See revised spec sections 221319 attached for Waste and Vent Piping Specialties.

Roof drain/leader piping is the same as sanitary drain piping in Spec Section 220150, 2.01 and 2.02. Service weight cast iron with no hub fittings above grade and bell and spigot with neoprene gaskets below grade.

19. Reference Drawing M-613-0 and Drawing I-600. The Building Management System (BMS) shall interface with the boiler plant PLC controls to import readings from the following meters. The communication shall be via MODBUS TCP/IP protocol from the Server Cabinet in the Electrical Room to the BMS system.

- i. Condensate Return Flowmeters (2)
- ii. Make-Up Water Flowmeter (1)
- iii. Main Steam Flowmeters (3)
- iv. Natural Gas Flowmeters (3)

20. It appears CT-TNK-001, 002, 003, 004 shown on MQ101 and MP101 are not indicated in the mechanical schedules; M-600, M-601 or M-602. Please advise.

- a. **Refer to specification section 48 55 85 for chemical feed system specifications.**

21. What exactly is to be included in alternate 3? Is it all items for the three boilers that are called for in spec section 485205-Packaged Boiler and Accessories?

- b. **Correct**

22. Is the alternate just for the materials and manufacturer's field services, plus tax, delivered to the site (plus subcontractor and GC mark-up)? Is all other labor, installation, piping, etc. not to be included?

- c. **Scope of supply (materials and labor) not provided by the boiler manufacturer should be included in the base bid**

23. The alternate on the bid form calls for one number; however, there are three LCC Data Forms in the specs that are to be attached to the proposal, one for each boiler, and each form could have 1, 2, 3, or 4 manufacturers listed, with the owner having an option as to which to choose.

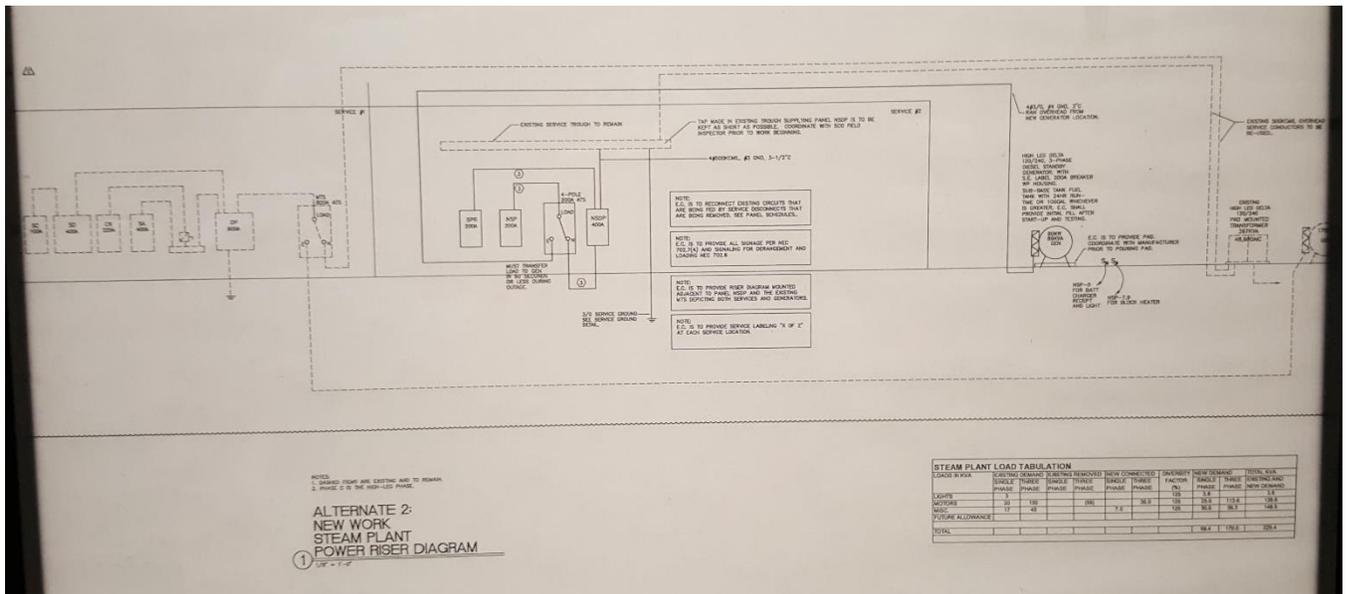
- d. Are we to have a number entered on the Bid Price line under Designer Calculation on the LCC Data Forms? If so, is this just to be the manufacturer's price, with no contractor mark-ups?
 - i. **Yes, please provide all information in the boiler part load performance table and the Bid Price line in the designer calculation table. The bid price for each boiler,**

when added to your base bid, should make your bid complete, with consideration for other add alternates.

24. Should the GCs have only one manufacturer on the LCC Data Forms submitted with their bid, or multiple?
- e. GC may determine, but multiple are acceptable.
25. How are we to present a single Alternate price if we have multiple manufacturers listed on the LCC Data Forms, and we don't know which will be selected based on LCC?
- i. The line for Alternate 3 may state "refer to LCC Data Forms" which should be attached to the Form of Proposal. The bid price listed for the selected boiler(s) will be added to the base bid.
26. In reviewing the specs I did not see a silencer used for steam blows, such as load testing. Is there one to be included?
- f. There is no permanent silencer. Refer to specification section 48 59 95 part 3.03 for steam line blowdown requirements including temporary silencer.
27. To expand on question #3 previously issued, Alt. #5 on the proposal form is for an additive bid for the temp steam line scope. It's our assumption that in order for the project to move forward as currently designed and without an extended duration stoppage to steam production, this alternate will need to be accepted. Please confirm if this is an accurate assumption. Alternatively, please confirm the understanding that if this alternate is not accepted, there are no additional design provisions identified for maintaining steam generation during the duration of the project.
- g. If this alternate is not accepted, the University will provide temporary steam service where needed through other means that will not be part of this contract.
28. There is a stair system shown on sheet A-105 between CL's 4 & 5 with the landing adjacent to CL G. The architect drawing directs us to the structural sheets, however, this stair does not appear to be located on the structural set. There is a section at the existing steam vault tunnel on sheet S-405 (detail A) but no stair is shown. Please clarify.
- h. Reference to structural to be removed, follow reference to architectural detail instead.
29. Between the existing shop building and the existing steam plant, there appears to be 2 generators and an existing transformer (see attached photo). These do not show up on electrical drawings. What happens to these?
- i. The two generators stay in service until the new steam plant is fully functional. The older Detroit Diesel generator carries the three older boilers, the newer Generac generator carries the three newer boilers. What appears as a transformer is a transclosure housing a high leg delta 240/120V arrangement of pole mounted style transformers for a total of 367kVA. This is the service to the plant. The cables to the transclosure transformers are thought to be 500kcmil and the cables to the Generac are thought to be four 3/0 with a #4 ground.
30. It appears we will have a new transformer in the same approximate location.
- j. Yes, there will be.
31. What does the existing transformer service? The existing steam plant and the shop building to the east?
- k. Yes.
32. These items may need to be moved prior to excavation.
- l. Yes, move is per the following:
 - m. A pad mount transformer that is 1000kVA, KNAN, 12,470V to 480/277V, 5.75%, D-Y, and 65°C rated is required. The transformer is ordered with an internal four position "T Blade" switch. Dead front loop fed design.
 - 1. Complete a thorough job planning session, acquire needed material to pole mount the existing transformers.

2. Morning of job - Safety discussion/plan.
3. Check the rotation of the 480V rotation at panel NSDP.
4. The steam plant transfers to the generators.
5. The power to the Transclosure is removed at Switch 22 via LOTO.
6. Test for voltage at Transclosure - Safety first.
7. Phase tape/identify the secondary cables. The secondary down comers from the overhead aerial to the pole mounted transformers is disconnected from the transformers.
8. Phase tape/identify the primary cables. The primary to the transformers is disconnected.
9. The Transclosure is removed.
10. The pole mounted transformers are mounted to the pole such that the secondaries can be reconnected to the existing aerial cables.
11. The new pad mounted transformer is installed in place of the Transclosure.
12. The incoming primary is connected to the "A" side bushings.
13. New MV cable is connected to the "B" side bushings and ran to a fused link and then the pole mounted transformer primaries.
14. The internal switch is set to "AB-Coil".
15. The LOTO at Switch 22 is removed - this should return normal power to the existing steam plant and energize the new transformer.
16. The secondary of the transformers is tested for voltage and phase rotation - Correct any rotation errors.
17. The internal switch is rotated to "AB", the new transformer goes dead - Confirm no voltage at secondaries.
18. When time comes, a new service is installed from the pad mount to the ATS in the Energy Production Facility.
19. The internal switch is set to "AB-Coil" - now both pole and pad transformers are energized.
20. New Energy Production Facility is commissioned.
21. The internal switch is set to "A-Coil" removing power from the pole mounted transformers.
22. Demo of steam plant begins to include pole, transformers, etc.

This process removes the requirement for new duct bank and provides a location for the transformer.



33. Both the SF and CW specs reference impact/blast resistance, yet the systems and glazing spec'd are not impact/blast products. This job appears to be far west NC, so I wouldn't think impact (hurricane) resistant products would be required. Just need to know if blast is indeed required. If so, the products specified (YKK BOD) are not the blast product line.
- i. **Impact (hurricane) and blast resistant products are not required for this project.**
34. I'm seeing multiple finishes spec'd. Class 1 clear anodize for SF and 2 coat paint for CW. Are there in fact multiple finishes on this job? If not, which do you want me to quote/qualify?
- i. **All aluminum doors and frames are to be Class 1 clear anodized.**
35. Finish warranty is spec'd in both SF and CW specs to be 20 year. The max we can get on anodize is 10 years (additional \$) or we can do the 20 yr for paint (additional \$).
- i. **10 for clear anodized is acceptable.**
36. The interior SF is spec'd as YES 40 FS which is a 1 3/4" x 4" system. Our interior SF is E4500 which is 1 3/4" x 4 1/2". Is this going to be acceptable?
- i. **Yes this is acceptable.**
37. Upon reviewing the specification section for the casework on this project, I noticed that the specifications require the casework fabricator to provide AWI Quality Certification Program certificates. Our shop has practiced AWI quality standards for over 15 years, and we are a member of AWI, although we are not participants of this particular program. We would like to submit a bid for this project. Please let me know if the architect will waive this requirement?
- a. **AWI Certificate requirement is waived however bidder is to submit qualifications and sample work of similar completed projects for review.**

SECTION 10 44 16 – FIRE EXTINGUISHERS

PART 1 - GENERAL

- 1.01 RELATED DOCUMENTS:
- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.02 SUMMARY:
- A. This Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.
- 1.03 REFERENCE STANDARDS:
- A. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - B. NFPA:
 - 1. NFPA 10: Portable Fire Extinguishers.
- 1.04 SUBMITTALS:
- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
 - B. Warranty: Sample of special warranty.
 - C. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- 1.05 WARRANTY:
- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

- 2.01 PERFORMANCE REQUIREMENTS:
- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
 - B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
- 2.02 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS:
- A. Fire Extinguishers: Type, size, and capacity for each mounting bracket indicated.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Amerex Corporation.
 - b. Ansul Incorporated.
 - c. Badger Fire Protection.
 - d. Buckeye Fire Equipment Company.

SECTION 10 44 16 – FIRE EXTINGUISHERS: continued

- e. Fire End & Croker Corporation.
- f. Guardian Fire Equipment, Inc.
- g. JL Industries, Inc.; a division of the Activar Construction Products Group.
- h. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
- i. Larsens Manufacturing Company.
- j. Moon American.
- k. Nystrom Building Products.
- l. Pem All Fire Extinguisher Corp.
- m. Potter Roemer LLC.
- n. Pyro-Chem; Tyco Safety Products.
- o. Strike First Corporation of America.
- 2. Valves: Manufacturer's standard.
- 3. Handles and Levers: Manufacturer's standard.
- 4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.
- B. Multipurpose Dry-Chemical Type in Steel Container: UL rated 4-A:20-B:C, 10-lb. nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
- C. Carbon Dioxide Type: UL rated 10-B:C, 10-lb. (4.5-kg) nominal capacity, with carbon dioxide in manufacturer's standard enameled-metal container.

2.03 MOUNTING BRACKETS:

- A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Amerex Corporation.
 - b. Ansul Incorporated.
 - c. Badger Fire Protection.
 - d. Buckeye Fire Equipment Company.
 - e. Fire End & Croker Corporation.
 - f. Guardian Fire Equipment, Inc.
 - g. JL Industries, Inc.; a division of the Activar Construction Products Group.
 - h. Larsens Manufacturing Company.
 - i. Nystrom Building Products.
 - j. Potter Roemer LLC.
 - k. Strike First Corporation of America.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
 - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
 - a. Orientation: Vertical.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Examine fire extinguishers for proper charging and tagging.

SECTION 10 44 16 – FIRE EXTINGUISHERS: continued

1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION:

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

END OF SECTION 10 44 16

SECTION 087100 – 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.
 - 2. Sliding doors.
 - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 01 Section “Cash Allowances”.
 - 2. Division 01 Section “Product Allowances”.
 - 3. Division 01 Section “Closeout Procedures”.
 - 4. Division 06 Section “Rough Carpentry”.
 - 5. Division 06 Section “Finish Carpentry”.
 - 6. Division 08 Section “Operations and Maintenance”.
 - 7. Division 08 Section “Door Schedule”.
 - 8. Division 08 Section “Door Hardware Schedule”.
 - 9. Division 08 Section “Hollow Metal Doors and Frames”.
 - 10. Division 08 Section “Interior Aluminum Doors and Frames”.
 - 11. Division 08 Section “Flush Wood Doors”.
 - 12. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
 - 13. Division 08 Section “All-Glass Entrances”.
 - 14. Division 28 Section “Access Control Hardware Devices”.
 - 15. Division 28 Section “Campus Access Control Hardware Devices”.
 - 16. Division 28 Section “Multi-Family Access Control”.
- 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 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. 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 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of 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.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data,

Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 - 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
 - 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 - 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified 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.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that

indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

- D. Door Hardware Standards and Guidelines: Prepare Door Hardware specification documents in accordance with the Owner's approved ASSA ABLOY Virtual Design Guide (VDG) standard for door opening products and applications.
- E. Building Information Modeling (BIM) Qualifications: BIM software tools and processes are used to produce and support data integration of product and technical information used in specifications, submittals, project reviews, decision support, and quality assurance during all phases of Project design, construction, and facility management. Door and hardware schedules and the associated product data parameters are to be derived, updated, and fully integrated with the coordinated BIM.
 - 1. Door Hardware BIM Software Tool: Openings Studio™ is the designated BIM software suite to be used in a coordinated effort with architects, contractors and trades to integrate Project product data and information into the coordinated Record BIMs and associated applications..
- F. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- G. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 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".

1.6 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 Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: 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.
- D. Building Information Modeling (BIM) Support: Utilize designated BIM software tools and obtain training needed to successfully participate in the Project BIM processes. All technical disciplines are responsible for the product data integration and data reliability of their Work into the coordinated BIM applications.

1.7 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. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual surface door closer bodies.
 - 4. Twenty five years for manual surface door closer bodies.
 - 5. Twenty five years for manual surface door closer bodies.
 - 6. Five years for motorized electric latch retraction exit devices.
 - 7. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. 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:

1. 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.
- C. 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. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Manufacturers:
 - a. Hager Companies (HA) - CB Series.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - MacPro Series.
 - c. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - TA Series.

- d. Stanley Hardware (ST) - CB Series.
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Manufacturers:
 - a. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).

2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Transfer Hinges: Provide electrified transfer hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Manufacturers:
 - a. Hager Companies (HA) - ETW-QC (# wires) Option.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - QC (# wires) Option.
 - c. Stanley Hardware (ST) – C Option.
- B. Electrified Quick Connect Continuous Geared Transfer Hinges: Provide electrified transfer continuous geared hinges with a 12" removable service panel cutout accessible without de-mounting door from the frame. Furnish with Molex™ standardized plug connectors with sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Manufacturers:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - SER-QC (# wires) Option.
 - b. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE) - SER-QC (# wires) Option.
- C. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length

required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.
2. Manufacturers:
 - a. Hager Companies (HA) - Quick Connect.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.
 - c. Stanley Hardware (ST) – WH Series.

2.4 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:
 - a. Door Controls International (DC).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Leather: Where specified English bridle and Italian Upholstery shall be 10 ounce with hand sewn saddle stiches and hand sewn end line stiches.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.

6. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.5 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 cams to suit hardware application.
 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.
 5. Keyway: Match Facility Restricted Keyway.
- D. Security Cylinders: ANSI/BHMA A156.5, Grade 1, patterned security cylinders and keys able to be used together under the same facility master or grandmaster key system. Cylinders are to be factory keyed.
 1. Manufacturers:
 - a. Corbin Russwin (RU) - Pyramid PS Series.
 - b. No Substitution.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
 1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Field verify and key locks to match Owner's existing system.
- F. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Two (2)
 2. Master Keys (per Master Key Level/Group): Five (5).
 3. Construction Keys (where required): Ten (10).
 4. Construction Control Keys (where required): Two (2).
- G. Construction Keying: Provide construction master keyed cylinders.

- H. Construction Keying: Provide temporary keyed construction cores.
- I. Key Registration List (Bitting List):
 - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 - 2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
 - 1. Provide status indicators with highly reflective color and wording for “locked/unlocked” or “vacant/occupied” with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1” x 0.6” with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
 - 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) – ML2000 Series.

2.7 ELECTROMECHANICAL LOCKING DEVICES

- A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): Subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below.
 - 1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.
 - 2. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML20900 Series.

2.8 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.

2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
6. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
7. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.

8. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
 9. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 10. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 11. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 12. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 13. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. 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. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
 - a. Von Duprin (VD) - 33/99 Rim Series.
- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
1. Provide keyed removable feature where specified in the Hardware Sets.
 2. Provide stabilizers and mounting brackets as required.
 3. Provide electrical quick connection wiring options as specified in the hardware sets.
 4. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - 700/900 Series.
 - b. Von Duprin (VD) - 9954 Series.

2.10 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size.

Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Commercial Duty): ANSI/BHMA 156.4, Grade 1 certified surface mounted, institutional grade 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, closing sweep, and latch speed control valves. Provide non-handed units standard.
1. Manufacturers:
 - a. LCN Closers (LC) – 4040XP Series.

2.11 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.

3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.12 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.13 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. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.14 ELECTRONIC ACCESSORIES

- A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
 - 1. Manufacturers:
 - a. Security Door Controls (SD) - DPS Series.
 - b. Securitron (SU) - DPS Series.
- B. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw plus 50% for the specified electrified hardware and access control equipment.
 - 1. Manufacturers:
 - a. Alarm Controls (AK) - APS Series.
 - b. Security Door Controls (SD) - 630 Series.
 - c. Securitron (SU) - BPS Series.
 - d. Von Duprin (VD) - PS.

2.15 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.

2.16 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.

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.
- B. Wood Doors: Comply with ANSI/DHI A115-W 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. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. 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 (Punch-Out Report): Reference Division 01 Section "Closeout Procedures". Final inspect installed door hardware and state in report whether work complies with or deviates from specification requirements, including whether door hardware is properly installed, operating and adjusted.
- B. Fire Door Assembly Inspection: Reference Division 01 Sections "Closeout Procedures" and "Cash Allowances" for testing and inspection allowances, including cost of engaging testing agencies, performing on-site inspections, and required documentation reporting.
 - 1. Allowance to perform the inspection and provide report documentation for an initial Fire Door Assembly Inspection upon completion of final hardware installation. A qualified fire door assembly (FDAI) inspector to certify swinging fire door openings are installed in accordance and NFPA 80 Standard for Fire Doors and Other Opening Protectives paragraph 5.2.4, regulatory compliance agencies, and local Authorities Having Jurisdiction (AHJ).
- C. Opening Tags: Affix readable, QR-type label to openings with password protected link-out to Openings Studio™ BIM software suite and the installed door and hardware information.

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. 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 SETS

- 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. The supplier is responsible for handing and sizing all products and providing the correct option for the appropriate door type and material where more than one is presented in the hardware sets. Quantities listed are for each pair of doors, or for each single door.
- C. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. RO - Rockwood
4. RU - Corbin Russwin
5. VD - Von Duprin

- 6. LC - LCN Closers
- 7. SU - Securitron

Hardware Sets

Set: 1.0

Doors: 101A, 201A
 Description: EXT PR - ALUM - EAC

1 Continuous Hinge	KCFMXX-HD1		PE
1 Continuous Hinge (EPT)	KCFMXX-HD1 SERXX		PE ✗
1 Removable Mullion	CR907BKM		RU
1 Rim Exit Device	33A-EO	US26D	VD
1 Rim Exit Device	QEL RX 33A-NL-OP 388	US26D	VD
2 Cylinder	As required - match campus standard	626	RU
2 Door Pull [Offset}	RM3310-24	US32D	RO
2 Door Closer	4040XP CUSH	AL	LC
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
2 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	PS914		VD

Notes:

Set: 2.0

Doors: 201B
 Description: VEST PR - ALUM

2 Continuous Hinge	KCFMXX-HD1		PE
4 Door Pull	BF168	US32D	RO
2 Door Closer	4040XP CUSH	AL	LC
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		

Set: 3.0

Doors: [210A](#)
 Description: SGL - VEST - - ALUM - EAC

1 Continuous Hinge (EPT)	KCFMXX-HD1 SERXX		PE	✗
1 Rim Exit Device	QEL RX 33A-L 06 360L	US26D	VD	
1 Cylinder	As required - match campus standard	626	RU	
1 Door Closer	4040XP CUSH	AL	LC	
1 Threshold	271A MSES25SS		PE	
1 Gasketing	by door / frame mfg			
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK	✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK	✗
1 Card Reader	Supplied by security contractor			✗
1 Position Switch	Supplied by security contractor		SU	✗
1 Power Supply	PS914		VD	

Notes: Door normally closed and secured.

Authorized credential retracts the latchbolt to allow free entry, door relocks upon closing. REX (request to exit) switch in device rail allow for free exit at all times

Entry by key override at all times

Door is fail secure

During daytime hours exit device may be manually or electronically "dogged" to allow door to be push/pull (free access/egress).

Set: 4.0

Doors: 210B

Description: EXT SGL - ALUM - PANIC

1 Continuous Hinge	KCFMXX-HD1		PE	
1 Rim Exit Device (Classroom)	33A-L 360L	US26D	VD	
1 Cylinder	As required - match campus standard	626	RU	
1 Door Closer	4040XP CUSH	AL	LC	
1 Threshold	271A MSES25SS		PE	
1 Gasketing	by door / frame mfg			

Set: 5.0

Doors: 113B, 204C

Description: EXT - HM - EAC

2 Hinge (heavy weight)	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK	
1 Hinge (heavy weight)	T4A3386 QCXX NRP 4-1/2" x 4-1/2"	US32D	MK	✗
1 Rim Exit Device	QEL RX 99L 06 996L	US26D	VD	
1 Cylinder	As required - match campus standard	626	RU	
1 Door Closer	4040XP CUSH	AL	LC	
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO	
1 Threshold	271A MSES25SS		PE	

1 Gasketing	303AS	PE
1 Rain Guard	346C x LAR	PE
1 Sweep	315CN	PE
1 ElectroLynx Harness	QC-C1500 [PS to hinge]	MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]	MK ✗
1 Card Reader	Supplied by security contractor	✗
1 Position Switch	Supplied by security contractor	SU ✗
1 Power Supply	PS914	VD

Notes: Door normally closed and secured.

Authorized credential retracts the latchbolt to allow free entry, door relocks upon closing. REX (request to exit) switch in device rail allow for free exit at all times

Entry by key override at all times

Door is fail secure

During daytime hours exit device may be manually or electronically "dogged" to allow door to be push/pull (free access/egress)

Set: 6.0

Doors: 212B

Description: EXT - HM - EAC

2 Hinge (heavy weight)	T4A3386 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Hinge (heavy weight)	T4A3386 QCXX NRP 4-1/2" x 4-1/2"	US32D	MK ✗
1 Electrified Mortise Lock	ML20906-SEC LWM M92	626	RU ✗
1 Door Closer	4040XP CUSH	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Threshold	271A MSES25SS		PE
1 Gasketing	303AS		PE
1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
1 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	BPS-Series (Volt & Amp as req)		SU ✗

Notes: Door normally closed and secured.

Authorized credential retracts the latchbolt to allow free entry, door relocks upon closing. REX (request to exit) switch in device rail allow for free exit at all times

Entry by key override at all times

Door is fail secure

During daytime hours exit device may be manually or electronically "dogged" to allow door to be push/pull (free access/egress)

Set: 7.0

Doors: 401A

Description: EXT - ROOF

3 Hinge	TA2314 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Apartment Lock	ML2067 LWM	626	RU
1 Door Closer	4040XP CUSH	AL	LC
1 Threshold	271A MSES25SS		PE
1 Gasketing	S88D		PE
1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE

Set: 8.0

Doors: 113C

Description: PR - WHSE - RATED

6 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Dust Proof Strike	570	US26D	RO
1 Flush Bolt (Self-latching)	2845 / 2945 (as required)	US26D	RO
1 Classroom Lock	ML2055 LWM	626	RU
2 Door Closer	4040XP REG	AL	LC
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
2 Door Stop	409 / 446 as required	US26D	RO
1 Gasketing	S88D		PE
1 Astragal set	18061CNB		PE

Set: 9.0

Doors: 115A

Description: RATED - STAIR - PANIC - EAC

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D	MK ✗
1 Rim Exit Device	QEL RX 99L 06 996L	US26D	VD
1 Cylinder	As required - match campus standard	626	RU
1 Door Closer	4040XP REG	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
1 Gasketing	S88D		PE
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
1 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	PS914		VD

Set: 9.1

Doors: 214B

Description: RATED - STAIR - PANIC

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Rim Exit Device	99L-BE 06 996L	US26D	VD
1 Door Closer	4040XP REG	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
1 Gasketing	S88D		PE

Set: 10.0

Doors: 103A

Description: SGL - RATED MEP [OHS]

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Storeroom Lock	ML2057 LWM	626	RU
1 Surface Closer	4040XP EDaw/62G	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Gasketing	S88D		PE

Set: 11.0

Doors: 206B

Description: SGL - CONTROL - RATED

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	ML2055 LWM	626	RU
1 Door Closer	4040XP REG	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
1 Threshold	271A MSES25SS		PE
1 Gasketing	S88D		PE
1 Sweep	315CN		PE

Set: 12.0

Doors: 104A

Description: SGL - LAB - RATED

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Classroom Lock	ML2055 LWM	626	RU
1 Door Closer	4040XP REG	AL	LC
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO

1 Gasketing S88D PE

Set: 13.0

Doors: 114A
Description: PR - ELEC

6 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Removable Mullion	CR907BKM		RU
1 Rim Exit Device	99EO	US26D	VD
1 Rim Exit Device	99L 06 996L	US26D	VD
2 Cylinder	As required - match campus standard	626	RU
2 Surface Closer	4040XP EDAw/62G	AL	LC
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
2 Silencer	608		RO

Set: 14.0

Doors: 301A
Description: PR - LOCK - MEP - EAC

6 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D	MK ✗
2 Flush Bolt	555 [12" / 72" AFF]	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Electrified Mortise Lock	ML20906-SEC LWM M92	626	RU ✗
2 Door Closer	4040XP REG	AL	LC
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
2 Door Stop	409 / 446 as required	US26D	RO
1 Astragal	357SP X S88D		PE
2 Silencer	608		RO
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
1 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	BPS-Series (Volt & Amp as req)		SU ✗

Set: 15.0

Doors: 110A
Description: SGL - STAIR - EAC

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D	MK ✗
1 Rim Exit Device	QEL RX 99L 06 996L	US26D	VD
1 Cylinder	As required - match campus standard	626	RU
1 Door Closer	4040XP REG	AL	LC

1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
1 Gasketing	S88D		PE
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
1 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	PS914		VD

Set: 16.0

Doors: [106A](#), [205A](#)

Description: SGL - CORR - EAC

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D	MK ✗
1 Electrified Mortise Lock	ML20906-SEC LWM M92	626	RU ✗
1 Door Closer	4040XP REG	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
1 Gasketing	S88D		PE
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
1 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	PS914		VD

Set: 17.0

Doors: [203A](#), [206A](#)

Description: SGL - LOCK - CLASS - EAC

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D	MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D	MK ✗
1 Electrified Mortise Lock	ML20906-SEC LWM M92	626	RU ✗
1 Door Closer	4040XP REG	AL	LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Door Stop	409 / 446 as required	US26D	RO
3 Silencer	608		RO
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]		MK ✗
1 Card Reader	Supplied by security contractor		✗
1 Position Switch	Supplied by security contractor		SU ✗
1 Power Supply	BPS-Series (Volt & Amp as req)		SU ✗

Set: 18.0

Doors: [108A](#), [116A](#)

Description: SGL - LOCKER

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK
1 Pull Plate	BF 110 x 70C	US32D RO
1 Push Plate	70C	US32D RO
1 Surface Closer	4040XP EDaw/62G	AL LC
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D RO
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D RO
3 Silencer	608	RO

Set: 19.0

Doors: [105A](#)

Description: SGL - DATA - EAC

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D MK ✗
1 Electrified Mortise Lock	ML20906-SEC LWM M92	626 RU ✗
1 Door Stop	409 / 446 as required	US26D RO
3 Silencer	608	RO
1 ElectroLynx Harness	QC-C1500 [PS to hinge]	MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]	MK ✗
1 Card Reader	Supplied by security contractor	✗
1 Position Switch	Supplied by security contractor	SU ✗
1 Power Supply	BPS-Series (Volt & Amp as req)	SU ✗

Set: 20.0

Doors: [207A](#)

Description: SGL - JAN [OHS]

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK
1 Storeroom Lock	ML2057 LWM	626 RU
1 Rim Exit Device	QEL RX 99L 06 996L	US26D VD
1 Surface Closer	4040XP EDaw/62G	AL LC
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D RO
1 Gasketing	S88D	PE

Set: 21.0

Doors: [208A](#)

Description: SGL - OFFICE - EAC

2 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK
1 Hinge (Elec)	TA2714 QCXX 4-1/2" x 4-1/2"	US26D MK ✗
1 Electrified Mortise Lock	ML20906-SEC LWM M92	626 RU ✗

1 Door Stop	409 / 446 as required	US26D RO
3 Silencer	608	RO
1 ElectroLynx Harness	QC-C1500 [PS to hinge]	MK ✗
1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]	MK ✗
1 Card Reader	Supplied by security contractor	✗
1 Position Switch	Supplied by security contractor	SU ✗
1 Power Supply	BPS-Series (Volt & Amp as req)	SU ✗

Set: 22.0

Doors: [107A](#), [109A](#), [204A](#)
Description: SGL - TOILET

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK
1 Privacy Lock	ML2030 LWM M19V	626 RU
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D RO
1 Door Stop	409 / 446 as required	US26D RO
1 Gasketing	S88D	PE

Set: 23.0

Doors: [209A](#)
Description: BREAK

3 Hinge	TA2714 4-1/2" x 4-1/2"	US26D MK
1 Passage Latch	ML2010 LWM	626 RU
1 Door Closer	4040XP REG	AL LC
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D RO
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D RO
1 Door Stop	409 / 446 as required	US26D RO
3 Silencer	608	RO

Set: 24.0

Doors: 111A, 113A, 206D, 206F, 212A, 212G
Description: OH DOOR

1 Hardware	All hardware By door mfg
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END OF SECTION 087100

SECTION 22 13 19 - WASTE AND VENT PIPING SPECIALTIES

PART 1 - GENERAL

1.01 REFERENCED SECTIONS

- A. Drawings, Standard General Conditions of the Contract including Supplementary General Conditions, Division-1 Specification Sections, Specification Divisions and Sections as referenced in Division 22 Section “Plumbing General Requirements”, and Division 22 Specification Sections as follows apply to work of this section:
 - 1. Section 220110 - Plumbing General Requirements
 - 2. Section 224000 - Plumbing Fixtures
 - 3. Section 220700 - Plumbing Insulation

1.02 SUBMITTALS

- A. Submit under provisions of Division 1, and Division 22, “Plumbing General Requirements” the following:
 - 1. manufacturer’s catalog data, installation, dimensions (including rough in dimensions)
 - 2. operating and maintenance data for plumbing specialty items
 - 3. catalog data and material certification for pipe materials and fittings.
- B. Provide for all items as listed in Specification Section 221319.

1.03 QUALITY ASSURANCE

- A. Equipment of the same general type shall be of the same make.
- B. Brand names and catalog numbers included with equipment or material specifications are used to indicate quality, rating or operating characteristics of the equipment of material.
- C. All materials provided shall be new and shall be approved by the Underwriter’s Laboratories, Inc., wherever that agency has applicable standards.
- D. All work shall be accomplished in a neat, workmanlike manner by experienced journeymen.
- E. All work shall be performed at such times as are required by the progress of the job.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience.
- B. Installer: NC State licensed plumber specializing in performing the work of this section with minimum 3 years experience.

1.05 REGULATORY REQUIREMENTS

- A. Installation and materials shall be in conformance with the North Carolina State Building Code 2018 Edition (Year 2015 Edition of the International Plumbing Code as modified and adopted by the North Carolina Building Code Council).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Division 1 and Division 220110, Plumbing General Requirements.

1.07 SYSTEM COMPLETION

- A. Provide all bolts, nuts, gaskets, sleeves, hangers, supports, miscellaneous valves and fittings, and specialties required for complete installation of the piping and equipment to be provided.

PART 2 - PRODUCTS

2.01 FLOOR DRAINS

- A. Non-Utility Areas - ANSI A112.21.1, Cast iron two piece body with double drainage flange, weep holes, deep body, reversible clamping collar, and adjustable nickel-bronze strainer; Models Z-415B and Z505, as manufactured by Zurn, or equal by Josam, J. R. Smith, or Wade.
- B. Utility Areas - 12" coated cast iron body with double drainage flange, weep holes, reversible clamping collar, and ductile iron grate; Model 2141 as manufactured by Jay R Smith, or equal by Josam, Zurn, or Wade.

2.02 CLEANOUTS

- A. Wall - Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw, as manufactured by Josam, or equal by Zurn, J. R. Smith, or Wade.
- B. Floor – finished areas - Cast iron body, adjustable, closure plug, nickel bronze cover secured with machine screw, as manufactured by Josam, or equal by Zurn, J. R. Smith, or Wade.
- C. Floor – utility areas - Cast iron body, adjustable, closure plug, heavy duty cast iron cover secured with machine screw, as manufactured by Josam, or equal by Zurn, J. R. Smith, or Wade.

2.03 FLOOR SINKS

- A. 12" x 12" x 8" iron body and square, 1/2 grate with 1/2 slotted openings, white acid resisting porcelain enamel interior and top, complete with aluminum anti-splash interior bottom dome strainer. Zurn, Smith, Josam

2.04 TRENCH DRAINS

- A. 6" wide, lacquered cast iron body, Class E ductile iron grate, radiused bottom and flanged ends with neoprene gaskets, end outlets, bottom outlet with dome strainer. MIFAB T1320, or equal by Zurn, Smith, Josam

2.05 OIL SEPARATOR

- A. 220 gallon precast polymer concrete, extension to floor level, heavy duty frame and diamond plate cover, minimum Class C. Zurn, Smith, Josam

2.06 ROOF DRAINS

- A. Single Drain - Cast iron body, combined flashing clamp and gravel stop, 15" diameter flange, underdeck clamp, cast iron dome, 2" dam for overflow drain, Jay R Smith model 1010, or equal by Josam, Zurn, or Wade.
- B. Combination Drain/Overflow – Dual drain, Cast iron body, combined flashing clamp and gravel stop, 15" diameter flange, cast iron dome, 2" dam for overflow drain, Jay R Smith model 1800, or equal by Josam, Zurn, or Wade.

PART 3 - INSTALLATION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Coordinate with other trades for proper installation.

END OF SECTION 22 13 19