ADDENDUM No. 4

Date: September 10, 2021

To: All Bidders

From: **Jenkins•Peer** *Architects*
Charlotte, N.C.

Re: UNC Charlotte – Residence Hall Phase XVI
SCO ID: 18-18333-02E
JPA Project #: 18NCC016

NOTICE to BIDDERS:
Bidder is hereby notified that this Addendum shall hereby become a part of the Construction Documents and the official Contract Documents, and shall be attached to the Project Manual for the Project.

The following items are intended to revise and clarify the Drawings and the Project Manual.

The bidder shall see that their Sub-Bidders are in full receipt of the information contained herein.

General Note:
This Addendum includes the following groups and subsequent "items" referring to various parts of the Contract Documents. Note that some "items" may refer to Bulletin Drawings or new Specification Sections which are attached at the back of the Addendum.

GENERAL INFORMATION

1. PDF Version of existing conditions and temporary pedestrian route from Pre-bid Meeting Presentation provided for information.

PROJECT MANUAL & TECHINCAL SPECIFICATIONS DIVISIONS

1. Notice to Bidders – Revised to document room change for bid opening to Room 310 in Cone Center.
2. Specification Section 087100 – Door Hardware: Replace in its entirety with the attached revised Section.
3. Specification Section 275319 – Emergency Responder Repeater System – Add the attached Section in its entirety.
4.

DRAWING SHEETS:

1. Electrical and Telecom Drawing revision narrative
2. Revised Electrical sheets: E-001, E-008, E-009, E-010, E-200S, E-200S-A, E201N, E-201S, E-202-N, E-202S, E-203N, E-203S, E-204N, E-204S, E-205N, E-205S, E-400S, E-400S-A, E-401S.
3. Revised Telecom Sheets: TC100N, TC100S, TC100SA, TC101N, TC101S, TC101SA, TC102N, TC103N, TC104N, TC105NA, TC601

RESPONSES TO EMAIL QUESTIONS (NOTE: QUESTIONS AND RESPONSES ARE INCLUDED HERE ONLY IF THEY ARE NOT RESPONDED TO ELSEWHERE IN THIS ADDENDUM): NOT USED

1. DUE TO THE TIGHT FOOTPRINT OF THE PROJECT SITE A TOWER CRANE WILL MOST LIKELY BE REQUIRED. PLEASE CONFIRM THE OWNERS REQUIREMENTS FOR ABANDONING THE CRANE FOUNDATION IN PLACE.

   RESPONSE: IT IS IMPOSSIBLE TO DETERMINE THE REQUESTED INFORMATION WITHOUT KNOWING PROPOSED LOCATION, DEPTH, SIZE ETC. FOR THE TOWER CRANE FOUNDATION. IF THE INTENT IS TO USE A TOWER CRANE, BIDS SHOULD BE BASED ON COMPLETE REMOVAL OF FOUNDATION. IT MAY BE POSSIBLE TO REVISE THE REQUIREMENT FOR REMOVAL ONCE THE CONTRACT IS AWARDED VIA DEDUCTIVE CHANGE ORDER.

2. IN THE PRE-BID MEETING PRESENTATION THERE WERE ONLY A FEW ALTERNATES PRESENTED. THE SPECIFICATION MANUAL, SECTION 01 23 00 INDICATES 20 ALTERNATES. WITH THIS MANY ALTERNATES WILL THE OWNER CONSIDER A SPLIT BID WITH THE BASE BID TURNED IN AT 1:00 AND THE ALTERNATES AT 3:00 WITH BOTH BID PACKAGES OPENED AND READ ALOUD AT 3:00?

   RESPONSE: NO SPLIT BID IS BEING CONSIDERED BY THE OWNER.

3. PLEASE CONFIRM THE SITEWORK IS BID AS CLASSIFIED. MEANING IF ANY UNSUITABLE SOIL OR ROCK IS ENCOUNTERED DURING EXCAVATIONS IT WOULD BE PAID AT UNIT RATES AND NOT BE PART OF THE BASE BID PROPOSAL.

   RESPONSE: THE SITE WORK IS TO BE BID AS CLASSIFIED EXCEPT WHERE THE CONTRACT DOCUMENTS CALL FOR ALLOWANCES WHICH ARE PART OF THE BASE BID. ADDITIONAL UNSUITABLE SOIL AND ROCK WILL BE PAID AT THE UNIT PRICES WHEN THE ALLOWANCES FOR THESE ITEMS HAVE BEEN EXHAUSTED. NOTE: ALL REQUESTS FOR USE OF ALLOWANCES SHALL BE THORUGHLY DOCUMENTED AND QUANTIFIED BY THE OWNER'S 3RD PARTY TESTING AGENCY. ADDITIONALLY, THE VALUE OF THE ALLOWANCES SHALL BE AS A FUNCTION OF THE UNIT PRICE LISTED ON THE BID FORM. ANY UNUSED PORTION OF ANY ALLOWANCE SHALL BE CREDITED BACK TO THE OWNER AT THE UNIT PRICE RATE. PLEASE REVIEW SECTION 012100 AND 012200 THOROUGHLY FOR ALL INFORMATION RELATED TO UNIT PRICES AND ALLOWANCES.

4. 8:00 A.M. WAS IDENTIFIED AS THE EARLIEST TIME NOISE GENERATING OPERATIONS COULD BEGIN WHEN CLASSES WERE IN SESSION. WHAT TIME ARE NOISE GENERATING ACTIVITIES REQUIRED TO CEASE?

   RESPONSE: NOISE-GENERATING ACTIVITIES SHALL CEASE NO LATER THAN 8 P.M. WITHOUT PRIOR AUTHORIZATION FROM THE OWNER.

5. ASSUMING THE BORINGS INCLUDED IN THE GEOTECHNICAL REPORT DATED AUGUST 13, 2018 WERE BASED ON THE EXISTING GRADES PRIOR TO THE INITIAL

CONSTRUCTION. IT APPEARS THAT ONLY BORINGS B-03, 04A, 05, 06, 07, 08, 09 AND 10 ARE THE ONLY BORINGS APPLICABLE TO THE MOORE HALL PROJECT. WERE THE POTENTIAL ISSUES IN THE REPORT (I.E. WET SOILS, POOR SOILS AND PARTIALLY WEATHERED ROCK) REMEDIATED BY THE INITIAL GRADING WORK THAT WAS PERFORMED? PLEASE VERIFY.

RESPONSE: ANY ISSUES OF UNSUTIABLE SOILS AND WEATHERED ROCK HAVE BEEN REMEDIATED DOWN TO THE CURRENT EXISTING GRADES AS WELL AS IN ANY OF THE UTILITY EXCAVATIONS PERFORMED UNDER THE PREVIOUS CONTRACT. NEITHER THE DESIGN TEAM NOR UNC CHARLOTTE CAN VERIFY THAT THERE WILL NOT BE ADDITIONAL UNSUITABLE SOILS OR WEATHERED ROCK ENCOUNTERED IN EXCAVATIONS REQUIRED UNDER THIS CONTRACT. NOTE: 'WET' SOILS ARE NOT NECESSARILY CONSIDERED UNSUITABLE. PLEASE REVIEW SECTION 312000 THROUGHLY FOR SOILS ABOVE MAXIMUM MOISTURE CONTENT.

6. THERE APPEARS TO BE A CONFLICT OF THE BID OPENING TIME. THE DOCUMENTS INDICATE 1:00 AND THE REVIEW OF BIDDING REQUIREMENTS INDICATE 2:00. PLEASE CLARIFY.

   RESPONSE: BIDS WILL BE OPENED AT 2:00 PM. THE REFERENCE TO RECEIPT OF BIDS BY 1:00 PM ON THE LAST PAGE OF THE NOTICE TO BIDDERS IS AS STATED FOR THOSE BIDDERS WHO DO NOT INTEND TO BE PRESENT AT THE ACTUAL BID OPENING. THIS WILL ALLOW THE UNIVERSITY TIME TO GET THE SEALED BIDS FROM THE FACILITIES MANAGEMENT BUILDING TO THE CONE BUILDING.

7. THE LIST OF MWBE CONTRACTORS THAT HAVE PERFORMED WORK ON THE CAMPUS WAS NOT ISSUED WITH ADDENDA THREE. WILL IT BE DISTRIBUTED UNDER SEPERATE COVER?

   RESPONSE: IT IS OUR UNDERSTANDING THAT UNC CHARLOTTE HAS SENT THE LIST TO ALL GC'S WHO SIGNED IN AT THE PRE-BID MEETING. IF YOU HAVE NOT RECEIVED THIS LIST PLEASE LET US KNOW IMMMEDIATELY AND WE WILL MAKE SURE IT IS RE-SENT.

8. PAGE 15 OF THE INSTRUCTIONS TO BIDDERS HAS A CONFLICT REGARDING PAYMENT OF PERMITS. ARTICLE 10, ITEM B SAYS TO INCLUDE THE COST, ITEM D STATES PERMITS ARE AT NO COST. PLEASE CLARIFY.

   RESPONSE: NO PERMITS ARE REQURED FOR THIS PROJECT THEREFORE THERE WILL BE NO COST REQUIRED.

9. ARE THE UTILITY LINES SERVICING MOORE HALL PRIVATE LINES OWNED BY THE UNIVERSITY OR CMUD? PLEASE CLARIFY.

   RESPONSE: ALL UTILITY LINES ON CAMPUS ARE PRIVATE AND OWNED BY UNC CHARLOTTE WITH THE EXCPETION OF NATURAL GAS LINES WHICH ARE OWNED BY PIEDMONT NATURAL GAS.

10. WITH THE MARKET BEING AS UNPREDICTABLE AS IT HAS BEEN, SUBCONTRACTORS AND MATERIAL VENDORS ARE NOT HOLDING THEIR CONTRACT NUMBERS FOR 30 DAYS, LET ALONE 90. CAN THE BID HOLD PERIOD BE REDUCED TO 30 DAYS?

    RESPONSE: THE BID HOLD PERIOD SHALL REMAIN AT 90 DAYS.

11. MATERIAL PRICE INCREASES ARE STILL COMING TO SUBCONTRACTORS AND VENDORS AT AN EXTRAORDINARY RATE. EVERY WEEK WE ARE RECEIVING LETTERS FROM SUPPLIERS THAT STATES A MATERIAL COST INCREASE IS COMING OF A CERTAIN PERCENTAGE. WITH THAT BEING SAID, WE WOULD RECOMMEND THAT A MATERIAL COST INCREASE ALLOWANCE IS INCORPORATED INTO THE BASE BID TO BE CARRIED BY ALL BIDDERS TO BE UTILIZED FOR THE UNFORESEEN MATERIAL COST ESCALATION THAT CONTRACTORS, SUBCONTRACTORS, AND MATERIAL SUPPLIERS COULD REASONABLY ACCOUNT FOR AT THIS POINT IN TIME.

    RESPONSE: NO MATERIAL ESCALATION ALLOWANCE WILL BE INCLUDED IN THE BASE BID.

12. PLEASE CONFIRM THE TYPE AND AMOUNT OF MATERIALS THAT HAVE ALREADY BEEN PROCURED FOR THIS PROJECT AND ARE TO BE UTILIZED BY THE CONTRACTORS.

    RESPONSE: THERE ARE MATERIALS LEFT ON SITE FROM THE PREVIOUS CANCELED CONTRACT. THE PRE-CAST MANHOLE STRUCTURES MAY BE UTILIZED UPON FIELD VERIFICATION BY THE CONTRACTED GC IF THEY ARE DEEMED SUTIABLE. ALL OTHER MATERIALS ON SITE ARE TO BE RECYCLED OR DISPOSED OF BY THE CONTRACTED GC.

13. WOULD IT BE POSSIBLE TO GET CAD FILES FOR THIS PROJECT?

    RESPONSE: CAD FILES WILL NOT BE ISSUED FOR BIDDING PURPOSES. ELECTRONIC CAD AND REVIT WILL BE RELEASED TO THE SUCCCESSFUL LOW BIDDER FOR THE PURPOSE OF COORDINATION OF THE WORK.

14. ARE THE GRAB BARS IN THE ADA SHOWER UNITS INCLUDED WITH THE SHOWER SEATS IN THE PREFAB UNITS?

    RESPONSE: SEE PLUMBING SCHEDULE REMARKS ON SHEET P-002.

15. ELECTRICAL SPEC SECTION 260519, PART 1, ITEM 3 INDICATES MC CABLE WOULD ONLY BE ALLOWED IF PRE-APPROVED BY THE STATE CONSTRUCTION OFFICE. HOWEVER, PART 2, ITEM 2.5 INDICATES WHERE IT (MC CABLE) IS TO BE USED. DOES THIS MEAN THAT FOR ITEM 2.5 IT IS PRE-APPROVED?

    RESPONSE: YES, MC CABLE IS APPROVED FOR THE LOCATIONS AND AREAS INDICATED IN SPECIFICATION 2.5 D. ONLY.

16. DUE TO THE HEIGHT OF THE STEEL COLUMNS, CAN THEY BE SPLICED? IF SO, CAN YOU PROVIDE DETAILS FOR THE SPLICE CONNECTION AND RECOMMENDED SPLICE HEIGHT?

    RESPONSE: COLUMN SPLICES SHALL BE WELDED PLATE SPLICES AND SHALL OCCUR 4' TO 5' ABOVE A FLOOR LEVEL. NUMBER OF SPLICES (LIKELY 1 OR 2 PER COLUMN) TO BE DETERMINED BY STEEL FABRICATOR AND CONNECTION TO BE DESIGNED BY FABRICATOR'S ENGINEER. SUBMIT TO EOR FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

17. IN REFERENCE TO YOUR RESPONSE TO RFI #8, ALTERNATE #1, FOR THE BUILD OUT OF LEVEL 5, IS TO BE PRICED PER BASE BID REQUIREMENTS. HOWEVER, THE BASE BID HAS ALTERNATES THAT MAY AFFECT ALTERNATE #1. HOW SHOULD WE PROCEED WITH PRICING OF THESE ALTERNATE ADDS AND/OR DEDUCTS (ALTERNATES 6, 7, 9, 12, 12A, 13, 14, 16, 17, 19A, 19B, AND 20) AS THEY RELATE TO ALTERNATE #1? SHOULD THERE BE ADDITIONAL ALTERNATE PRICING TO ISOLATE THE LEVEL 5 COST OF THE LATER ALTERNATES?

    RESPONSE: ALTERNATES 1 THRU 5 SHALL BE BID ACCORDING TO BASE BID REQUIREMENTS ONLY. SINCE THE OWNER DOES NOT KNOW UNTIL BIDS ARE RECEIVED WHICH ALTERNATES WILL BE ACCEPTED, IT WOULD BE OVERLY CUMBERSOME TO HAVE SUB-ALTERNATES FOR THE SHELL SPACES FOR ALL OF THE OTHER ALTERNATES. IF DESIRED BY THE OWNER, COSTS TO INCORPORATE ANY OTHER ACCEPTED ALTERNATES INTO THE PROJECT FOR ALTERNATES 1 THRU 5 (SHOULD ANY OF THEM BE ACCEPTED) WILL BE NEGOTIATED AND INCORPORATED INTO THE CONTRACT VIA CHANGE ORDER.

18. THERE ARE DISCREPANCIES IN THE SHOWERS. PLEASE SEE THE ATTACHED REFERENCES (A406 AND P002 RESPECTIVELY).

    RESPONSE: PLEASE CLARIFY THE QUESTION AS THIS DISCREPANCY WAS ADDRESSED VIA ADDENDUM 3 RE-ISSUE OF A-406.

19. IS IT YOUR INTENT TO ADHERE TO THE SPEC SECTION 07 84 13 REQUIREMENT FOR A SINGLE SOLE SOURCE FIRESTOP SPECIALTY CONTRACTOR FOR ALL PENETRATION FIRESTOP SYSTEMS AND FIRE-RESISTIVE JOINT SYSTEMS?

    RESPONSE: YES.

20. SPEC 281300 DESCRIBES THE ACCESS CONTROL SYSTEM AS CONTRACTOR PROVIDED. DOOR HARDWARE SPEC 087100 INDICATES IN GENERAL THAT CARD READERS, CREDENTIALS, CONNECTIONS TO OWNERS NETWORK ARE PROVIDED BY OWNER AS PART OF A BLACKBOX SYSTEM. REFERENCE HARDWARE GROUP INT-12 FOR EXAMPLE. DOOR 050 ON A601 INDICATES TO USE HARDWARE SET INT-12. SPEC 087100 HARDWARE SCHEDULE INDICATES THE CARD ACCESS SYSTEM TO BE BY OWNER. DOOR 050 ON E-400S INDICATES CARD ACCESS DEVICES PROVIDED BY THE CONTRACTOR.

RESPONSE: E-008 AND SPECIFICATION 281300 ARE CORRECT. E-008 SPELLS OUT THE REQUIREMENTS OF THE ACCESS CONTROL. SEE ALSO REVISISIONS FOR CLARIFICATION TO SECTION 087100 INCLUDED IN THIS ADDENDUM.

21. PLEASE CLARIFY THE SCOPE OF THE ACCESS CONTROL SYSTEM TO BE INCLUDED IN THE BASE BID, ALONG WITH ALTERNATE 16. WHO PROVIDES THE SYSTEM, WHICH DOORS ARE TO BE INCLUDED IN THIS BID AND THE QUANTITY/TYPE OF DEVICES REQUIRED AT EACH LOCATION.

    RESPONSE: DOORS WITH ACCESS CONTROL ARE SHOWN ON THE ELECTRICAL SYSTEMS SHEETS. E-008 EXPLAINS THE REQUIREMENTS AS WELL AS SPECIFICATION 281300. THE BASE BID IS THE PUBLIC OPTION (BY THE CONTRACTOR, NOT OWNER) WHICH INCLUDES MULTIPLE MANUFACTURERS. THE ALTERNATE IS FOR A SPECIFIC MANUFACTURER TO MATCH THE CAMPUS STANDARD. THE HARDWARE SETS INDICATED ON THE DOOR SCHEDULE AND IN SECTION 087100 PROVIDE ADDITIONAL INFORMATION TO COORDINATE WITH THE ABOVE.

22. SINCE THE 5TH FLOOR SPACE IS NOT FINISHED IN THE BASE BID, SHOULD IT BE TREATED AS “EXPOSED”FIREPROOFING WHICH WOULD BE MORE EXPENSIVE OR SHOULD IT BE PRICED AS “CONCEALED” SINCE IT WILL BE COVERED EVENTUALLY? SHOULD THERE BE AN ALTERNATE TO DIFFERENTITATE BETWEEN THE TWO?

    RESPONSE: PRICE ALL SHELL SPACE FIREPROOFING AS CONCEALED.

23. PLEASE CLARIFY WHICH DUCT BANKS SHOWN ON E-100 SITE PLAN CORRESPOND WITH “ALTERNATE BID” AS INDICATED ON THE TELECOMM RISER E-010 COMING OUT OF MDF 035. WHICH ALTERNATE IS THIS FOR? IS THIS THE COMMUNICATIONS DUCT BANK BETWEEN SANFORD HALL EXISTING TELECOM MH31-A AND THE MDF ROOM? SITE PLAN E-100 DOES NOT INDICATE ANY ALTERNATE WORK. RISER DIAGRAM ON E-010 ALSO DOES NOT INDICATE WORK FROM MDF TO NEW TELECOMM MANHOLE CONNECTING TO THE SOV CONDUITS SHOWN ON E-100. PLEASE INDICATE IF THIS WORK IS IN THE SCOPE OF THE PROJECT AND INCLUDE IT ON THE RISER DIAGRAM.

    RESPONSE: NO LONGER AN ALTERNATE, THE ALTERNATE INFORMATION WAS REMOVED ON THE SITE PLAN E-100. EVERYTHING REQUIRED OF E-010 IS SHOWN ON E-100 AND IS BASE BID.

24. THERE DOES NOT APPEAR TO BE SPECIFICATION SECTIONS PROVIDED FOR THE TWO WAY COMMUNICATION SYSTEM INDICATED IN DETAIL 4 ON E-006 AND THE EMERGENCY RESPONDER SYSTEM INDICATED IN DETAIL 1 ON E-011. WILL PROJECT SPECIFICATIONS BE PROVIDED FOR THESE SYSTEMS OR ARE THEY TO BE INCLUDED IN THE PROJECT BID BASED ON THE DETAIL INFORMATION ALONE.

    RESPONSE: SEE SPECIFICATION SECTION 275319 WHICH IS ADDED IN ITS ENTRIETY TO THE PROJECT MANUAL VIA THIS ADDENDUM

25. REGARDING ALTERNATE 18 IS SECTION 09 65 10 RESILIENT SHEET FLOORING SHOULD IT BE INCLUDED IN THE BASE BID OR IS IT INTENDED TO BE PART OF THE ALTERNATE? PLEASE CLARIFY.

    RESPONSE: FLOORING COVERED UNDER SECTION 096510 IS CFCI AS PART OF THE BASE BID AND IS NOT PART OF ALTERNATE 18.

26. Will the Owner provide the temporary floor protection for the floor areas they install? Also note the flooring being an OFOI package takes away our ability to include MWBE participation for this work and subsequently toward the 20% goal.

    RESPONSE: YES, IF THE OWNER IS PROVIDING THE FLOORING, FLOOR PROTECTION SHALL ALSO BE PROVIDED. THE 20% ASPIRATIONAL GOAL APPLIES TO THE FULL AMOUNT OF THE AWARDED CONTRACT.

27. Cast Stone Specification 04 72 00, 2.4, B lists dry cast method for production of units. Will you accept wet pour process? P&D Architectural Precast has performed work for UNCC over the years using this type of product and would like to bid the project.

    RESPONSE: WET CAST IS NOT ACCEPTABLE.

28. A-621 Finish schedule lists a Basis of Design for Q-1. There is no specific specification for this type of countertop. Can we assume we can use any of the products listed in spec. 06 40 23. section 2.13?

    RESPONSE: PROVIDE BASIS OF DESIGN QUARTZ COUNTERTOP OR APPROVED EQUAL BY SILESTONE, KRION, LG HAUSYS OR WILSONART.

29. Addendum 3, page 33 of file regarding the marked up plan showing existing conditions & temporary pedestrian route. The marked up plan is blurry, can a clear copy of this be provided?

    RESPONSE: SEE ATTACHED PDF VERSION.

30. Confirm for Base Bid Owner furnished and installed flooring, this will include Final Clean and wax of all resilient flooring.

    RESPONSE: CONFIRMED.

31. Alternate 5, drawing A-409, confirm that marker boards shown are owner furnished and installed. If this is not correct provide specification and sizes of those required.

    RESPONSE: CONFIRMED.

32. Will Termite Treatment to foundation be required? If so can a specification be provided.

    RESPONSE: TERMITE TREATMENT IS NOT REQUIRED.

33. Can specifications be provided for landscaping?

    RESPONSE: ALL LANDSCAPING IS OFOI. LANDSCAPE PLANS INCLUDED IN THE SET ARE FOR REFERENCE ONLY AS INDICATED IN THE TITLE BLOCK ON THOSE SHEETS. CONTRACTOR IS RESPONSIBLE FOR BRINGING ALL PLANTING AREAS TO SUBGRADE ONLY.

34. A2 at roof notes snow guard extents on sheet A111. A111 does not call out specifically any snow guards. Confirm the snow guard extent will be at locations of the small "H" shaped marks on plan.

    RESPONSE: H-SHAPED MARKS ON PLAN ARE SNOW GUARDS. PROVIDE THREE-ROW PATTERN PER SPEC SECTION 077100.

35. Base Bid ceiling at level 5 is not clear on A125. Are we per C1/A521 attach furring/hat channel to bottom of CF roof trusses and install gyp board? 1) Is this 5/8" Fire code gyp board, fire taped only? 2) does this still apply to Alternate 1 with additional lower ceiling? 3) Can you provide size and spacing of furring/hat channel?

    RESPONSE: BASE BID CEILING ON LEVEL 5 MUST BE CONSTRUCTED TO MEET UL P523 ASSEMBLY AS NOTED ON A310 SERIES DRAWINGS AND G-314. RESPONSE TO ALL OTHER QUESTIONS ARE INCLUDED IN THE REQUIREMENTS FOR THE UL P523 DESIGN.

36. Please define the BIM requirements during construction. Specification section 01 10 00, Digital Management Exchange Guidelines, reads as if this were a CM at Risk contract. Please advise.

    RESPONSE: SECTION 017823 IS INCORRECTLY NOTED AS 011000 IN THE FOOTER OF THAT SECTION. WE FIND NO REFERENCE TO CM AT RISK IN THE BODY OF THAT SECTION. HOWEVER, IF REFERENCE TO CM EXISTS, IT SHOULD BE INTERPRETED AS MEANING THE GC. THE BIM REQUIREMENTS DURING CONSTRUCTION ARE AS INDICATED IN THIS SECTION.

37. In multiple specification references the services of a licensed NC surveyor are required. In some cases the specifications require E&O insurance. 1) Please confirm this is correct and 2) if correct please provide the E&O insurance requirements.

    RESPONSE: THE REQUIREMENT FOR A LICENSED SURVEYOR TO HAVE E&O INSURANCE IS CORRECT. THE PURPOSE OF PROVIDING THE COI IS

TO PROVIDED VERIFICATION OF E&O COVERAGE. THERE IS NO SET LIMIT ON THAT COVERAGE AMOUNT.

38. Is the final as-built survey limited to the limits of construction?

    RESPONSE: YES

39. Will all retainage be released prior to any "seasonal" testing associated with the project commissioning that may occur post completion?

    RESPONSE: FINAL RETAINAGE HELD WILL BE RELEASED AS PART OF THE FINAL PAY APPLICATION ONCE ALL CLOSEOUT REQUIREMENTS HAVE BEEN COMPLETED. THE OWNER DOES NOT HOLD RETAINAGE FOR COMMISSIONING EFFORTS POST COMPLETION AND CERTIFICATION OF FINAL APPLICATION FOR PAYMENT.

40. In regards to the Green Globes certification it is clear the successful GC will compile the necessary documentation. Which entity will take the lead as administrator and process the formal application?

    RESPONSE: CORRECT. THE GC IS REQUIRED TO PROVIDE ALL DOCUMENTATION. JENKINS PEER ARCHITECTS WILL BE THE ADMINISTRATOR AND PROCESS THE FORMAL APPLICATION.

41. In reading through the spec it calls out a Class W1 rating for water seal at floor penetrations. Another portion of the spec states water resistant sealants at plumbing "wet areas". Can you clarify where the Class W1 rating needs to be accounted? In the same vein, will the MEP trades be utilizing fire rated floor sleeves? Fire sleeves can accommodate the W-rating with a top cap.

    RESPONSE: CLASS W1 IS REQUIRED AT ALL FLOOR PENETRATIONS IN WET LOCATIONS (RESTROOMS, JANITOR CLOSETS ETC.). FIRE SLEEVES MAY BE USED AT THE FIRESTOPPING CONTRACTOR'S DISCRETION. PLEASE REVIEW SECTION 078413 FOR SOLE SOURCE AND FCIA CERTIFIED INSTALLER REQUIREMENTS FOR ALL FIRESTOPPING.

42. Is this project tax exempt?

    RESPONSE: NO. SALES TAX REPORTS ARE REQUIRED TO BE SUBMITTED WITH EACH MONTHLY PAY APPLICATION.

43. Frame for 036 Lounge calls for H/M frame on elevation (A403), however, the door schedule calls for storefront. To be fire rated this would need to be hollow metal. Please confirm.

    RESPONSE: REVISE FRAME TO HM WITH RATING AS INDICATED.

44. Storefront Int Elevation, COR108 Elev Lobby and 050 Lounge (A612) calls for fire rated glazing. Frame would need to be hollow metal and not standard storefront if fire rating is required. Please confirm.

    RESPONSE: REVISE FRAMES TO HM WITH RATING AS INDICATED.

45. SF7 (A553) has no hardware specified on door schedule. Please clarify.

    RESPONSE: PROVIDE SET EXT-08 AT DOOR COR007.

46. Referenced Spec Section: 08 71 00 - Door Hardware Section 2.12 Please confirm pricing is to follow Alternate 12 request. Per alternate 12 the owner will supply the cylinders and the contractor should provide, in the bid documents, an alternate for the contractor to supply cylinders. Please confirm correct.

    RESPONSE: THE ALTERNATE PRICING IS FOR THE CYLINDRICAL LOCKS COVERED UNDER 087100 2.08 ONLY. IN ALL CASES (BASE BID AND ALTERNATE), THE MEDECO CYLINDERS COVERED UNDER 087100 2.12 WILL BE PROVIDED AND INSTALLED BY THE OWNER. PARAGRAPH 087100 2.12 b. 3. HAS BEEN DELETED FROM THE REVISED SECTION 087100 INCLUDED IN THIS ADDENDUM.

47. Referenced Spec Section: 08 14 16 - Wood Doors Section 2.1.E Referenced spec section calls for Architect to select color from a full range of samples. Interior finish material schedule on A-621 list (5) laminates by Arborite and Wilsonart, but does not designate one specific for the wood doors. Please confirm/provide design intent finish of the doors.

    RESPONSE: THE FINISH SCHEDULE LAMINATES ARE NOT INTENDED FOR USE ON THE WOOD DOORS. AS INDICATED IN THE WOOD DOOR SPEC, AND AS PART OF THE SUBMITTAL PROCESS, THE ARCHITECT WILL PICK A LAMINATE FROM THE WOOD DOOR MANUFACTURER'S FULL RANGE OF AVAILABLE LAMINATES.

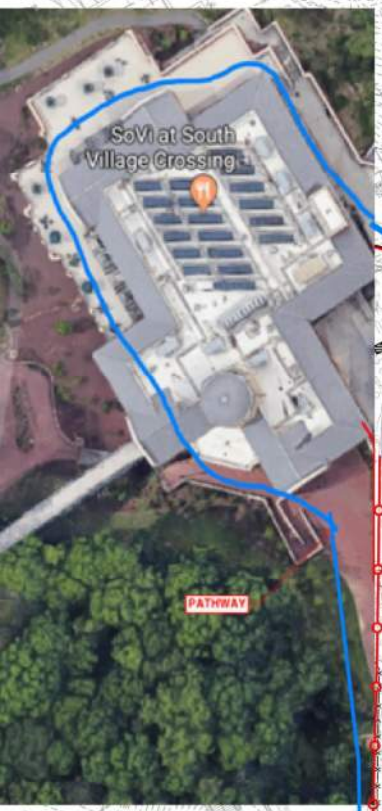
48. Spec 08 17 00 Integrated Door Assemblies, section 2.1, D.2 states doors to be Steel Doors.Openings# Elev102 and #Elev103 are listed as Wood Doors on the Door Schedule (A-602).

    RESPONSE: OPENINGS ELEV102 AND ELEV103 ARE CORRECT AS WOOD DOORS. ALL OTHER INTEGRATED DOOR ASSEMBLIES ARE STEEL DOORS.

End of ADDENDUM No. 4

Attachments:

- PDF Version of existing conditions and temporary pedestrian route from Pre-bid Meeting Presentation
- Revised Notice to Bidders
- Revised Specification Section 087100 Door Hardware
- Revised Specification Section 275319 – Emergency Responder Repeater System
- Addendum 4 Drawing Revision Narrative
- Revised Electrical sheets: E-001, E-008, E-009, E-010, E-200S, E-200S-A, E201N, E-201S, E-202-N, E-202S, E-203N, E-203S, E-204N, E-204S, E-205N, E-205S, E-400S, E-400S-A, E-401S.
- Revised Telecom Sheets: TC100N, TC100S, TC100SA, TC101N, TC101S, TC101SA, TC102N, TC103N, TC104N, TC105NA, TC601



TEMPORARY CONSTRUCTION FENCE (TYP.)

Sanford Hall Ln.

SILT FENCE OUTLET PER DETAIL B3/C4.00.

TEMPORARY SILT FENCE (TYP.) PER DETAIL B5/C4.00.

TEMPORARY INLET PROTECTION (TYP.) PER DETAIL B2/C4.00.

EXISTING BUILDING SANFORD HALL

EXISTING BUILDING LEVINE HALL

LAYDOWN AREA

ANY PORTION OF THE EXISTING GRASSED AREA USED FOR LAYDOWN (INCLUDING ACCESS TO LAYDOWN AREA) SHALL BE PREPARED WITH A TEMPORARY 4" LAYER OF CRUSHED STONE.

EXISTING BUILDING LEVINE HALL

EXISTING BUILDING HOUSING & RESIDENCE LIFE

Alumni Way

"Recreation

NOTE:

THIS SHEET SHALL BE USED FOR REFERENCE ONLY. EROSION CONTROL MEASURES SHOWN ON THIS SHEET HAVE ALREADY BEEN INSTALLED UNDER PREVIOUS CONSTRUCTION AND WILL NOT NEED TO BE REINSTALLED, ONLY MAINTAINED AND ADJUSTED AS NEEDED TO MEET THE REQUIREMENTS SHOWN ON SHEETS C6.00 - C6.03. CONTRACTOR IS RESPONSIBLE FOR VISITING SITE TO VERIFY PRE-EXISTING CONDITIONS SHOWN.

SILT SACK INLET PROTECTION (TYP.) PER DETAIL C2/C4.00.

SILT FENCE OUTLET PER DETAIL B3/C4.00.

TEMPORARY CONSTRUCTION FENCE (TYP.)

INSTALL TEMPORARY FILL AS NEEDED ON CONST. ENTRANCE TO ESTABLISH A SMOOTH VERTICAL CURVE. THE ENTRANCE SHOULD RISE ABOVE ROADWAY TO KEEP CONSTRUCTION RUNOFF ON SITE AND LIMIT ROADWAY RUNOFF FROM ENTERING SITE. CONSTRUCT A PARABOLIC MOUND 6" HIGH AND 4' WIDE, 10 FEET BEFORE E.O.P.

TEMPORARY CONSTRUCTION ENTRANCE. SEE DETAIL A3/C4.00. ENTRANCE TO BE INSPECTED WEEKLY AND AFTER EACH RAINFALL AND RETOPPED AS NECESSARY. ALL CONSTRUCTION TRAFFIC SHALL ENTER AND LEAVE SITE OVER A CONSTRUCTION ENTRANCE.

GRAPHIC SCALE
20 0 20 40 60
1" = 20'

TRUE NORTH

BID SET

C-604

Jenkins • Peer Ar
112 South Tryon Street,
Charlotte, North Carolin
(t) 704/372-6665

KWK ARCHITEC
103 West Lockwood Ave.
St. Louis, Missouri 6311
(t) 314/942-8810

STANLEY D. LINDSE
ASSOCIATES, LTD.
Civil Engineer
NC License # C-3232
1347 Harding Place, Suit
Charlotte, North Carolin
(t) 704/333-3122

SKA CONSULTING E
INC.
Structural Engineer
NC License # F-0568
4651 Charlotte Park Dri
Charlotte, North Carolin
(t) 704/424-9663

OPTIMA ENGINEERI
Mechanical, Electrical,
Fire Protection Engineer
NC License # C-0914
1927 South Tryon Street
Charlotte, North Carolin
(t) 704/338-1292

LANDDESIGN, INC.
Landscape Design
NC License # C-015
223 North Graham Stree
Charlotte, North Carolin
(t) 704/333.0325

UNC CHARL
Charlotte,
RESIDENCE HA
PHASE XVI

TAG	DESCRIPTION
1	ADDENDUM 2

SCO ID: 18-18333-02
JPA Project:
Drawn By:
Checked By:
Date:
Jenkins • Peer Architects ©

PRE-EXISTIN
EROSION CO
MEASURES
REFERENCE

N O T I C E T O B I D D E R S

Sealed bids will be received by the University of North Carolina at Charlotte in Charlotte, NC, up to **2:00 p.m. Thursday, September 23, 2021** in **Room 210** of the Cone University Center (#5 on the campus map – http://facilities.uncc.edu/maps) on the UNC Charlotte campus and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment for the:

Residence Hall Phase 16
SCO ID# 18-18333-02E

The project consists of a new Residence Hall of 6 floors and approximately 147,000 sq. ft. The building will include student sleeping units in traditional double configuration along with three apartments, housing offices, study and recreational lounges, public kitchen, laundry and bathrooms. The building will also include classroom space and utility and accessory spaces for Housing and Residence Life operations. The project will be designed and constructed utilizing the Green Globes Rating/Certification Assessment program developed and administered by Green Building Initiative.

Visitor parking is available across from the Cone University Center in Cone Deck 1 & 2.

Bids will be received *for* Single-Prime contract from licensed General Contractors only.
Attendance at the Pre-bid meeting is a requirement for submitting a bid.

All proposals shall be lump sum.

FACE COVERINGS ARE REQUIRED IN ALL INDOOR SPACES AT UNC CHARLOTTE

Pre-Bid Meeting

A **mandatory** Pre-bid meeting for all interested single prime General Contractors will be held at **2:00 p.m. Tuesday, August 31, 2021** in Room 210, Cone University Center (Building #5 on the campus map – http://facilities.uncc.edu/maps) on the UNC Charlotte campus. Visitor parking is available across from the Cone University Center in Cone Deck 1 & 2. The meeting will address **Owner-preferred alternates**, project specific questions, issues, bidding procedures and bid forms. A site visit will also be conducted immediately following the meeting.

This meeting is open to the public and minority and small business firms are encouraged to attend.

Complete plans, specifications and contract documents will be open for inspection at the following:

1. Jenkins Peer Architects, 112 South Tryon Street, Suite 1300, Charlotte, NC 28284, Phone: (704) 372-6665
2. ~~**Owner – UNC Charlotte, Facilities Management/Camus Police Building (#55A/B on the campus map – http://facilities.uncc.edu/maps) 2nd floor – Planning, Design and Construction (PDC), 9151 Cameron Blvd, Charlotte, NC 28223, Phone: (704) 687-0615**~~

Digital copies of the plans, specifications and contract documents will be available at the following:

- Jenkins-Peer Architects, Thom Tonetti at ttonetti@jenkinspeer.com
- Construct Connect at content@constructconnect.com, (800) 364-2059
- North Carolina Offices of Dodge Data & Analytics (formerly McGraw-Hill Construction) (800) 393-6343 – http://construction.com/dodge
- Metrolina Minority Contractors Association (MMCA), mmca@mmcaofcharlotte.org.
- Richa Graphics Plan Room: https://planroom.richa.com/pnonline/index.asp

Hard copies of the design documents can also be obtained for a refundable deposit of Two Hundred Fifty Dollars ($250.00) in cash or by certified check per set. Deposit fee will be returned upon receipt of a clean set of documents in good condition within ten (10) days after bid date. Contact Thom Tonetti at ttonetti@jenkinspeer.com for instructions to obtain hard copies.

NOTE: The bidder shall include with the bid proposal the form *Identification of Minority Business Participation* identifying the minority business participation it will use on the project and shall include either *Affidavit **A*** or *Affidavit **B*** as applicable. Forms and instructions are included within the Proposal Form in the bid documents. Failure to complete these forms is grounds for rejection of the bid. (GS143-128.2c Effective 1/1/2002.)

All contractors and sub-contractors are hereby notified that they must have proper license as required under the state laws governing their respective trades.

General contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina, will be observed in receiving and awarding general contracts. General contractors submitting bids on this project must have license classification for Building Contractor – Unlimited.

Each proposal shall be accompanied by a cash deposit or a certified check drawn on some bank or trust company, insured by the Federal Deposit Insurance Corporation, of an amount equal to not less than five percent (5%) of the proposal, or in lieu thereof a bidder may offer a bid bond of five percent (5%) of the bid executed by a surety company licensed under the laws of North Carolina to execute the contract in accordance with the bid bond. Said deposit shall be retained by the owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

A performance bond and a payment bond will be required for one hundred percent (100%) of the contract price.

Payment will be made based on ninety-five percent (95%) of monthly estimates and final payment made upon completion and acceptance of work.

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of **90** days.

The owner reserves the right to reject any or all bids and to waive informalities.

Bidders who will not attend the Bid Opening need to ensure their sealed bids are delivered **no later than 1:00 p.m**. September 23, 2021 to the following:

Mailed Proposals:
Attn: Ms. Joyce Clay – Planning, Design and Construction
The University of North Carolina at Charlotte
Facilities Management – Planning, Design & Construction

9201 University City Blvd.
Charlotte, NC 28223-0001
(704) 687-0615

OR

Hand-Delivered:
Attn: Ms. Joyce Clay – Planning, Design and Construction
The University of North Carolina at Charlotte
Facilities Management/Campus Police Building
2nd Floor – Planning, Design and Construction
9151 Cameron Blvd.
Charlotte, NC 28223
(704) 687-0615

Designer:
Jenkins Peer Architects
112 S Tryon St, Ste. 1300
Charotte, NC 28284
704-372-6665

Owner:
University of North Carolina at Charlotte
9201 University City Blvd
Charlotte, NC 28223-0001
704-687-0615

SECTION 087100 – DOOR HARDWARE

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. Section includes:

1. Mechanical and electrified door hardware for:

a. Swinging doors.

2. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
3. Division 26 sections for connections to electrical power system and for low-voltage wiring.
4. Division 28 sections for coordination with other components of electronic access control system.

1.03 REFERENCES

A. UL - Underwriters Laboratories

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule

2. Recommended Locations for Builders Hardware
3. Key Systems and Nomenclature

C. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties

1.04 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 requirements.
2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, “EXAMINATION” article, herein.

B. Action Submittals:

1. Product Data: Technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:

a. Wiring Diagrams: For power, signal, and control wiring and including:
1) Details of interface of electrified door hardware and building safety and security systems.
2) Schematic diagram of systems that interface with electrified door hardware.
3) Point-to-point wiring.
4) Risers.

3. Door Hardware Schedule: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:

a. Door Index; include door number, heading number, and Architects hardware set number.
b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
c. Quantity, type, style, function, size, and finish of each hardware item.
d. Name and manufacturer of each item.
e. Fastenings and other pertinent information.
f. Location of each hardware set cross-referenced to indications on Drawings.
g. Explanation of all abbreviations, symbols, and codes contained in schedule.
h. Mounting locations for hardware.
i. Door and frame sizes and materials.
j. Name and phone number for local manufacturer's representative for each product.
k. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include operational descriptions for: egress, ingress (access), and fire/smoke alarm connections.
1) Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

4. Key Schedule:

    a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system's function, key symbols used and door numbers controlled.
    b. Use ANSI/BHMA A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
    c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
    d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
    e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.
        1) Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.

    f. Prepare key schedule by or under supervision of supplier, detailing Owner’s final keying instructions for locks.

5. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
2. Product data for electrified door hardware:

    a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

3. Certificates of Compliance:

    a. UL listings for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
    b. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.
    c. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in “QUALITY ASSURANCE” article, herein.

4. Warranty: Special warranty specified in this Section.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:

    a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
    b. Catalog pages for each product.
    c. Factory order acknowledgement numbers (for warranty and service)
    d. Name, address, and phone number of local representative for each manufacturer.
    e. Parts list for each product.
    f. Final approved hardware schedule, edited to reflect conditions as-installed.
    g. Copies of floor plans with keying nomenclature
    h. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.

i. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.05QUALITY ASSURANCE

A. Supplier Qualifications and Responsibilities: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides certified Architectural Hardware Consultant (AHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.

1. Warehousing Facilities: In Project's vicinity.
2. Scheduling Responsibility: Preparation of door hardware.
3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
4. Coordination Responsibility: Assist in coordinating installation of electronic security hardware with Architect and electrical engineers and provide installation and technical data to Architect and other related subcontractors.

a. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.

B. Architectural Hardware Consultant Qualifications: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC).
2. Can provide installation and technical data to Architect and other related subcontractors.
3. Can inspect and verify components are in working order upon completion of installation.
4. Capable of producing wiring diagrams.
5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.

C. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

D. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

F. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in “REFERENCES” article, herein.

G. Keying Conference

1. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.

b. Preliminary key system schematic diagram.
c. Requirements for key control system.
d. Requirements for access control.
e. Address for delivery of keys.

H. Pre-installation Conference

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

I. Coordination Conferences:

1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.
2. Electrified Hardware Coordination Conference: Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.06DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1. Deliver each article of hardware in manufacturer’s original packaging.

C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
2. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

E. Deliver keys and cylinders to Owner by registered mail or overnight package service.

1.07COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Provide complete in place mock-up of electrified access control hardware at door location as determined by Architect/Owner. Provide layout and installation of electrified door hardware with connections to power supplies and security systems. Coordinate with associated trades. Mock-up may remain in place following coordination meeting.

1.08 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Beginning from date of Substantial Completion, for durations indicated.

a. Closers:
1) Mechanical: 30 years.

b. Automatic Operators: 2 years.
c. Exit Devices:
1) Mechanical: 3 years.
2) Electrified: 1 year.

d. Locksets:
1) Mechanical: 10 years.
2) Electrified: 1 year.

e. Continuous Hinges: Lifetime warranty.
f. Key Blanks: Lifetime

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

1.09 MAINTENANCE

A. Maintenance Tools: Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PRODUCTS

2.01 MANUFACTURERS

A. **T**he Owner requires use of certain products for their unique characteristics and project suitability to insure continuity of existing and future performance and maintenance standards. After investigating

available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

C. Approval of products from manufacturers indicated in “Acceptable Manufacturers” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

C. Cable and Connectors: Hardwired Electronic Access Control Lockset and Exit Device Trim:

1. Data: 24AWG, 4 conductor shielded, Belden 9843, 9841 or comparable.
2. DC Power: 18 AWG, 2 conductor, Belden 8760 or comparable.
3. Provide type of data and DC power cabling required by access control device manufacturer for this installation.
4. Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with sufficient number and wire gauge with standardized Molex plug connectors to accommodate electric function of specified hardware. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

2.03HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Ives 5BB series.
2. Acceptable Manufacturers and Products: Hager BB series, Stanley FBB Series.

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:

   a. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

3. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
4. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Interior Lockable Doors: Non-removable pins
   d. Interior Non-lockable Doors: Non-rising pins

5. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

2.04CONTINUOUS HINGES

A. Aluminum Geared

1. Manufacturers:

   a. Scheduled Manufacturer: Ives.
   b. Acceptable Manufacturers: Select, Stanley.

2. Requirements:

   a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
   b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
   c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
   d. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
   e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
   f. Install hinges with fasteners supplied by manufacturer.
   g. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05ELECTRIC POWER TRANSFER

A. Manufacturers:

a. Scheduled Manufacturer: Von Duprin EPT-10.
b. Acceptable Manufacturers: ABH PT1000, Securitron CEPT-10.

B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 FLUSH BOLTS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.07 COORDINATORS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.08 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage ND series.
2. Acceptable Manufacturers and Products: Arrow GL series, Dorma C800 Series

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3 hour fire doors.
2. Cylinders: Refer to "CYLINDERS" article, herein.

3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.

    a. Lever Design: Schlage Rhodes
    b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.09 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Sargent 88 Series
2. Acceptable Manufacturers and Products: Von Duprin 99 Series, Detex Advantex series.

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to “CYLINDERS” article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer’s approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
12. Provide electrified options as scheduled.
13. Top latch mounting: double or single tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
14. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

    a. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.10 ELECTRIC STRIKES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: HES 8000 Series.
2. Acceptable Manufacturers and Products: Folger Adam 300 Series, Von Duprin 6000 series.

B. Requirements:

1. Provide electric strikes designed for use with type of locks shown at each opening.
2. Provide electric strikes UL Listed as burglary-resistant.
3. Where required, provide electric strikes UL Listed for fire doors and frames.
4. Provide transformers and rectifiers for each strike as required. Verify voltage with electrical contractor.

2.11 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Altronix
2. Acceptable Manufacturers and Products: Precision ELR series, Schlage/Von Duprin PS Series.

B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:

   a. 12/24 VDC Output, field selectable.
   b. Class 2 Rated power limited output.
   c. Universal 120-240 VAC input.
   d. Low voltage DC, regulated and filtered.
   e. Polarized connector for distribution boards.
   f. Fused primary input.
   g. AC input and DC output monitoring circuit w/LED indicators.
   h. Cover mounted AC Input indication.
   i. Tested and certified to meet UL294.
   j. NEMA 1 enclosure.
   k. Hinged cover w/lock down screws.
   l. High voltage protective cover.

2.12 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer: Medeco Logic

B. Requirements:

1. Provide conventional cylinders to match Owner’s existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer’s series as indicated.
2. Provide the following keyway: Medeco Logic
3. Provide 100 cylinders to Owner for installation.

2.13KEYING

A. Provide cylinders keyed into Owner's existing factory registered keying system.

B. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

C. Requirements:

1. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

    a. Master Keying system as directed by the Owner.

2. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
3. Provide keys with the following features:

    a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
    b. Patent Protection: Keys and blanks protected by one or more utility patent(s).

4. Identification:

    a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Do not provide blind code marks with actual key cuts.
    b. Identification stamping provisions must be approved by the Architect and Owner.
    c. Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
    d. Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.

5. Quantity: Furnish in the following quantities.

    a. 200 keys.

2.14DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4040XP series.
2. Acceptable Manufacturers and Products: Corbin-Russwin DC8000 series, Sargent 281 series.

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 3/4 inch (19 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.

5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.15 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4600 series.
2. Acceptable Manufacturers and Products: Norton 6000 series, Besam Power Swing.

B. Requirements:

1. Provide low energy automatic operator units with hydraulic closer complying with ANSI/BHMA A156.19.
2. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
3. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
4. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.
5. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check valve, sweep valve, latch valve to control door.
6. Provide drop plates, brackets, or adapters for arms as required for details.
7. Provide hard-wired actuator switches for operation as specified.
8. Provide weather-resistant actuators at exterior applications.
9. Provide key switches with LED’s, recommended and approved by manufacturer of automatic operator as required for function described in operation description of hardware group below. Cylinders: Refer to “KEYING” article, herein.
10. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
11. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.16 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide offset pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
2. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.

2.17 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers: Glynn-Johnson.
2. Acceptable Manufacturers: Rixson, Sargent.

B. Requirements:

1. Provide heavy duty concealed mounted overhead stop or holder as specified for exterior and interior vestibule single acting doors.
2. Provide heavy duty concealed mounted overhead stop or holder as specified for double acting doors.
3. Provide heavy or medium duty and concealed or surface mounted overhead stop or holder for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking wall, open against equipment, casework, sidelights, and where conditions do not allow wall stop or floor stop presents tripping hazard.
4. Where overhead holders are specified provide friction type at doors without closer and positive type at doors with closer.

2.18 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.19 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International.
2. Acceptable Manufacturers: National Guard, Reese.

B. Requirements:

1. Provide thresholds, weather-stripping (including door sweeps, seals, and astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Size of thresholds:

    a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width

4. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.20 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.21 MAGNETIC HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: LCN.
2. Acceptable Manufacturers: Rixson, Sargent.

B. Requirements:

1. Provide wall or floor mounted electromagnetic door release as specified with minimum of 25 pounds of holding force. Coordinate projection of holder and armature with other hardware and wall conditions to ensure that door sits parallel to wall when fully open. Connect magnetic holders on fire-rated doors into the fire control panel for fail-safe operation.

2.22 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer: Schlage.
2. Acceptable Manufacturers: GE-Interlogix, Sargent.

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.

2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.23 DOOR VIEWERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide appropriate door viewer for door type and rating with minimum of 180-degree view area.

2.24 LATCH PROTECTORS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Burns, Rockwood.

B. Provide stainless steel latch protectors of type required to function with specified lock.

2.25 FINISHES

A. Finish: BHMA 626/652 (US26D); except:

1. Hinges at Exterior Doors: BHMA 630 (US32D)
2. Continuous Hinges: BHMA 630 (US32D)
3. Continuous Hinges: BHMA 628 (US28)
4. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
5. Protection Plates: BHMA 630 (US32D)
6. Overhead Stops and Holders: BHMA 630 (US32D)
7. Door Closers: Powder Coat to Match
8. Wall Stops: BHMA 630 (US32D)
9. Latch Protectors: BHMA 630 (US32D)
10. Weatherstripping: Clear Anodized Aluminum
11. Thresholds: Mill Finish Aluminum

EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

H. Lock Cylinders: Cylinders to be provided to Owner for Installation.

I. Wiring: Coordinate with Division 26, ELECTRICAL sections for:

1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Testing and labeling wires with Architect's opening number.

J. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

K. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

L. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

M. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

N. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

O. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

P. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 FIELD QUALITY CONTROL

A. Engage qualified manufacturer trained representative to perform inspections and to prepare inspection reports.

1. Representative will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.04 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, Installer's Architectural Hardware Consultant must examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.05 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

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

3.06 DOOR HARDWARE SCHEDULE

A. Hardware items are referenced in the following hardware. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

Hardware Group No. EXT-01

For use on Door #(s):
ECOR110

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY	628	IVE
2	EA	DUMMY PUSH BAR	8893	630	SAR
2	EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	AUTO OPERATOR	6000 SERIES	628	NOR
2	EA	CUSH SHOE SUPPORT	4040XP-30	689	LCN
2	EA	RECEIVER KIT	AS REQUIRED		NOR
1	EA	TRANSMITTER KIT	AS REQUIRED		NOR
1	EA	RAIN DRIP	142AA	AA	ZER
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER
1	SET	WIRING DIAGRAMS	AS REQUIRED		
	EA		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.

2. DOOR FUNCTION: DOOR ALWAYS AVAILABLE FOR FREE INGRESS AND EGRESS.

3. WIRELESS TRANSMITTER WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN RHR LEAF.

Hardware Group No. EXT-02

For use on Door #(s):
E159A E159B

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY	628	IVE
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	INSTITUTION LOCK	ND82LD RHO	626	SCH
2	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	4040XP SHCUSH MC TBWMS	689	LCN
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER
	EA		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		

Hardware Group No. EXT-03

For use on Door #(s):
E006 STR004

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	EXIT DEVICE	8804-PSB (FUNC: KEYED, PULL TRIM)	630	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER
1	EA	DOOR CONTACT	7766	628	SCE

DOOR PROP ALARM AT STR004 BY SECURITY PROVIDER ~~(DOOR PROP ALARM AT STR004 BY OWNER)~~

Hardware Group No. EXT-04

For use on Door #(s):
E055A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	EXIT DEVICE	8810 (FUNC: EXIT ONLY)	US32D	SAR
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		

Hardware Group No. EXT-05

For use on Door #(s):
STR002A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	EXIT DEVICE	8804-PSB (FUNC: KEYED, PULL TRIM)	630	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	566A-223	A	ZER
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
	SET	WIRING DIAGRAMS	AS REQUIRED		
1	EA		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		

Hardware Group No. EXT-06

For use on Door #(s):
STR003

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	EXIT DEVICE	8804-PSB (FUNC: KEYED, PULL TRIM)	630	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	65A-223	A	ZER
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		

Hardware Group No. EXT-07

For use on Door #(s):
E050

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELECTRIFIED EXIT DEVICE	56-8804 (FUNC: ELEC LATCH RETRACT. KEYED. OPTIONAL PULL TRIM)	US32D	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	MOUNTING PLATE	4040XP-18	689	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	65A-223	A	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		
1	EA		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.
3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.~~

~~3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. EXT-08

For use on Door #(s):
COR007 COR008

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELECTRIFIED EXIT DEVICE	56-8804 (FUNC: ELEC LATCH RETRACT. KEYED. OPTIONAL PULL TRIM)	US32D	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316	IVE
1	EA	AUTO OPERATOR	6000 SERIES	628	NOR
2	EA	SURFACE HARDWIRED ACTUATOR	AS REQUIRED		NOR
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	65A-223	A	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		
1	EA		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.

2. DOOR FUNCTION: DOORS NORMALLY SCHEDULED FOR UNLATCHING DURING BUSINESS HOURS. AFTER HOURS, ENTRY BY CREDENTIAL TO CARD READER ALLOWS ACTIVE DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.

3. PRESSING ACTUATORS WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN DOOR AUTOMATICALLY.

4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOORS NORMALLY SCHEDULED FOR UNLATCHING DURING BUSINESS HOURS. AFTER HOURS, ENTRY BY CREDENTIAL TO CARD READER ALLOWS ACTIVE DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.~~

~~3. PRESSING ACTUATORS WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN DOOR AUTOMATICALLY.~~

~~4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. EXT-09

For use on Door #(s):
STR101A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELECTRIFIED FIRE EXIT DEVICE	12-56-8804-PSB/PTB (FUNC: FIRE RATED, ELEC LATCH RETRACT. KEYED. PULL TRIM)	US32D	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	65A-223	A	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		
1	EA		WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.
3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.~~

~~3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. EXT-10

For use on Door #(s):
COR009

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY	628	IVE
1	EA	EXIT DEVICE	NB-8704-PSB/PTB	626	SAR
1	EA	EXIT DEVICE	NB-8710 (FUNC: SVR, LBR, EXIT ONLY)	626	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
2	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
2	EA	MEETING STILE	328AA-S	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER
2	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		

Hardware Group No. EXT-11

For use on Door #(s):
E016 E062

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	655A-223	A	ZER
1	EA	DOOR CONTACT	7766	628	SCE

DOOR PROP ALARM AT E016 BY SECURITY PROVIDER. ~~(DOOR PROP ALARM AT E016 BY OWNER.)~~

Hardware Group No. INT-01

For use on Door #(s):

004	034	104	134	204	234
250	264	282	304	334	350
364	382	404	434	450	464
482	504	534	550	564	582

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-02

For use on Door #(s):

016	029	040	049A	129	135
142	162	163	164	166	168
169	170	171	172	229	235
242	274	329	335	342	374
429	435	442	474	529	535
542	574				

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-03

For use on Door #(s):

012	112	212	267	312	367
412	467	512	567	STR001	STR002
STR101	STR102	STR103	STR201	STR202	STR202
STR203	STR301	STR302	STR303	STR401	STR402
STR403	STR501	STR502	STR503		

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-04

For use on Door #(s):

013	113	149	150	213	252
352	413	452	513	552	COR313

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	ND40S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-05

For use on Door #(s):

014	042	114	167	214	275
314	375	414	475	514	575

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-06

For use on Door #(s):
035

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	OH STOP	90S	630	GLY
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-07

For use on Door #(s):

030	110	130	136	210	230
289	310	330	389	410	430
489	510	530	589		

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL CLASSROOM LOCK	ND94LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-08

For use on Door #(s):
036

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	VANDL CLASSROOM LOCK	ND94LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-09

For use on Door #(s):
008 042A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-10

For use on Door #(s):
042B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	OH STOP	450S	630	GLY

Hardware Group No. INT-11

For use on Door #(s):
049 058 266 266A 366 366A
466 466A 566 566A

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB52	630	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
2	EA	MEETING STILE	328AA-S	AA	ZER
2	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-12

For use on Door #(s):
050

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELECTRIFIED FIRE EXIT DEVICE	12-56-8813 LL (FUNC: FIRE RATED, ELEC LATCH RETRACT. KEYED. RIGID LEVER/ROSE TRIM)	US32D	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER~~ (BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE SECURITY HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO ELECTRIFIED EXIT DEVICE ALLOWS DOOR TO RETRACT LATCHBOLT. KEY OVERRIDE AVAILABLE.
3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.~~ (1. THE HARDWARE SUPPLIER SHALL COORDINATE THE SECURITY HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO ELECTRIFIED EXIT DEVICE ALLOWS DOOR TO RETRACT LATCHBOLT. KEY OVERRIDE AVAILABLE.~~

~~3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. INT-13

For use on Door #(s):
054 153 154

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-14

For use on Door #(s):
055

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELECTRIFIED EXIT DEVICE	56-8804-PSB	626	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	AUTO OPERATOR	6000 SERIES	628	NOR
1	EA	RECEIVER KIT	AS REQUIRED		NOR
1	EA	TRANSMITTER KIT	AS REQUIRED		NOR
2	EA	SURFACE HARDWIRED ACTUATOR	AS REQUIRED		NOR
3	EA	SILENCER	SR64	GRY	IVE
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	POWER SUPPLY	AL175UL		ALT
	SET	WIRING DIAGRAMS	AS REQUIRED		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE SECURITY HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR NORMALLY SCHEDULED UNLOCKED DURING BUSINESS HOURS. AFTER HOURS, ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE ELECTRIFIED PANIC DEVICE. KEY OVERRIDE AVAILABLE. FREE EGRESS AT ALL TIMES.
3. PRESSING ACTUATOR WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN DOOR. OUTSIDE ACTUATOR TO BE DISABLED AFTER HOURS UNLESS VALID CREDENTIAL IS PRESENTED.
4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE SECURITY HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR NORMALLY SCHEDULED UNLOCKED DURING BUSINESS HOURS. AFTER HOURS, ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE ELECTRIFIED PANIC DEVICE. KEY OVERRIDE AVAILABLE. FREE EGRESS AT ALL TIMES.~~

~~3. PRESSING ACTUATOR WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN DOOR. OUTSIDE ACTUATOR TO BE DISABLED AFTER HOURS UNLESS VALID CREDENTIAL IS PRESENTED.~~

~~4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. INT-15

For use on Door #(s):
056

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	MANUAL FLUSH BOLT	FB358	626	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	OH STOP & HOLDER	90H	630	GLY
1	EA	WALL STOP	WS406/407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-16

For use on Door #(s):
056A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	OH STOP	90S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-17

For use on Door #(s):
058A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-18

For use on Door #(s):
COR110

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	REMOVABLE MULLION	KR4954	689	VON
1	EA	ELECTRIFIED EXIT DEVICE	56-8804 (FUNC: ELEC LATCH RETRACT. KEYED. OPTIONAL PULL TRIM)	US32D	SAR
1	EA	ELECTRIFIED EXIT DEVICE	56-8810	626	SAR
2	EA	CYLINDER	PROVIDED BY OWNER	626	MED
2	EA	90 DEG OFFSET PULL	8190EZHD 12" STD	630-316	IVE
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	AUTO OPERATOR	6000 SERIES	628	NOR
1	EA	CUSH SHOE SUPPORT	4040XP-30	689	LCN
2	EA	RECEIVER KIT	AS REQUIRED		NOR
1	EA	MULLION SEAL	8780NBK PSA	BK	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
2	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOORS MAY BE PROGRAMMED UNLATCHED FOR FREE ENTRY. FREE EGRESS AT ALL TIMES. AFTER HOURS, ENTRY BY CREDENTIAL TO CARD READER ALLOWS ACTIVE DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.
3. WIRELESS TRANSMITTER TO ACTIVATE AUTOMATIC OPERATOR AND OPEN RHR LEAF. DOOR TO BE SEQUENCED WITH EXTERIOR RHR LEAF TO OPEN SIMULTANEOUSLY.
4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOORS MAY BE PROGRAMMED UNLATCHED FOR FREE ENTRY. FREE EGRESS AT ALL TIMES. AFTER HOURS, ENTRY BY CREDENTIAL TO CARD READER ALLOWS ACTIVE DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.~~

~~3. WIRELESS TRANSMITTER TO ACTIVATE AUTOMATIC OPERATOR AND OPEN RHR LEAF. DOOR TO BE SEQUENCED WITH EXTERIOR RHR LEAF TO OPEN SIMULTANEOUSLY.~~

~~4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. INT-19

For use on Door #(s):
061

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
2	EA	WALL STOP	WS406/407CCV	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-20

For use on Door #(s):
COR208 COR308 COR408 COR508

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY	628	IVE
2	EA	FIRE EXIT HARDWARE	12-NB-8715 LL (FUNC: SVR, LBR, FIRE RATED, PASSAGE LEVER/ROSE)	32D	SAR
2	EA	SURFACE CLOSER	4040XP EDA TBWMS	689	LCN
2	EA	FIRE/LIFE WALL MAG	SEM7850 24V	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.

2. DOOR FUNCTION: DOORS NORMALLY HELD OPEN BY MAGNETIC HOLD OPEN. ACTIVATION OF FIRE ALARM WILL RELEASE MAGNET, AND DOORS WILL CLOSE AND LATCH.

3. COORDINATE WITH FIRE ALARM CONTROL SYSTEM.

Hardware Group No. INT-21

For use on Door #(s):
ELEV001 ELEV101 ELEV102 ELEV103 ELEV201 ELEV301
ELEV401 ELEV501

Provide each SGL door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		HARDWARE BY MANUFACTURER		

Hardware Group No. INT-22

For use on Door #(s):
050B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	FIRE EXIT HARDWARE	12-8815 LL (FUNC: FIRE RATED, PASSAGE LEVER/ROSE TRIM)	32D	SAR
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-23

For use on Door #(s):
060

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL ENTRANCE LOCK	ND92LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	OH STOP	90S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-24

For use on Door #(s):
152 152A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-25

For use on Door #(s):
155 156

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL ENTRANCE LOCK	ND92LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-26

For use on Door #(s):
158

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-27

For use on Door #(s):
173 174 175

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL ENTRANCE LOCK	ND92LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT TBWMS	689	LCN
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-28

For use on Door #(s):

254 354 454 554

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	VANDL CLASSROOM LOCK	ND94LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XP SCUSH TBWMS	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-29

For use on Door #(s):
COR104

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELECTRIFIED FIRE EXIT DEVICE	12-56-8804-PSB/PTB (FUNC: FIRE RATED, ELEC LATCH RETRACT. KEYED. PULL TRIM)	US32D	SAR
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	AUTO OPERATOR	6000 SERIES	628	NOR
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.
3. WIRELESS TRANSMITTERS WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN DOOR AUTOMATICALLY.
4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED. FREE EGRESS AT ALL TIMES. ENTRY BY CREDENTIAL TO CARD READER ALLOWS DOOR TO RELEASE LATCH. KEY OVERRIDE AVAILABLE.~~

~~3. WIRELESS TRANSMITTERS WILL ACTIVATE AUTOMATIC OPERATOR AND OPEN DOOR AUTOMATICALLY.~~

~~4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. INT-30

For use on Door #(s):
COR108 COR108

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	628	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	ELECTRIC STRIKE	8000 Series 12/24VDC FSE	630	HES
1	EA	AUTO OPERATOR	6000 SERIES	628	NOR
1	EA	RECEIVER KIT	AS REQUIRED		NOR
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	CREDENTIAL READER	BY SECURITY PROVIDER ~~(BLACKBOARD 4300 (PROVIDED BY OWNER))~~		
1	EA	DOOR CONTACT	7766	628	SCE
1	EA	DOOR PROP ALARM	BY SECURITY PROVIDER ~~(BY OWNER)~~		
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE SECURITY HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED FROM LOUNGE SIDE. PRESENTING VALID CREDENTIAL AT READER WILL RELEASE ELECTRIC STRIKE AND ALLOW FOR ENTRY INTO ELEVATOR CORRIDOR. DOOR ALWAYS AVAILABLE FOR FREE ENTRY INTO LOUNGE. ACTIVATION OF FIRE ALARM, DOOR TO REMAIN LATCHED.
3. OPERATOR ACTIVATED BY WIRELESS TRANSMITTER WILL SHUNT ELECTRIC STRIKE AND ALLOW FOR ENTRY.
4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE SECURITY HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR NORMALLY CLOSED AND LOCKED FROM LOUNGE SIDE. PRESENTING VALID CREDENTIAL AT READER WILL RELEASE ELECTRIC STRIKE AND ALLOW FOR ENTRY INTO ELEVATOR CORRIDOR. DOOR ALWAYS AVAILABLE FOR FREE ENTRY INTO LOUNGE. ACTIVATION OF FIRE ALARM, DOOR TO REMAIN LATCHED.~~

~~3. OPERATOR ACTIVATED BY WIRELESS TRANSMITTER WILL SHUNT ELECTRIC STRIKE AND ALLOW FOR ENTRY.~~

~~4. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. INT-31

For use on Door #(s):
050A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	OH STOP	90S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. INT-32

For use on Door #(s):
051 052 053 059 159A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	ND40S RHO	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

Hardware Group No. INT-33

For use on Door #(s):
057 151

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL CLASSROOM LOCK	ND94LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

Hardware Group No. UHW-1

For use on Door #(s):

001	002	003	005	007	009
010	011	015	017	018	019
020	021	022	023	024	025
026	027	028	031	032	033
037	039	041	043	044	045
046	047	048	101	102	103
105	106	107	108	109	111
115	116	117	118	119	120
122	123	124	125	126	127
128	131	132	137	138	139
140	141	143	144	145	146
147	148	161	165	176	201
202	203	205	206	207	208
209	211	215	216	217	218
219	220	221	222	223	224
225	226	227	228	231	232
233	236	237	238	239	240
241	243	244	245	246	247
248	249	251	253	255	256
257	258	259	260	261	262
263	265	268	269	270	271
272	273	276	277	278	279
280	281	283	284	285	286
287	288	301	302	303	305
306	307	308	309	311	315
316	317	318	319	320	321
322	323	324	325	326	327
328	331	332	333	336	337
338	339	340	341	343	344
345	346	347	348	349	351
353	355	356	357	358	359
360	361	362	363	365	368
369	370	371	372	373	376
377	378	379	380	381	383
384	385	386	387	388	401
402	403	405	406	407	408
409	411	415	416	417	418
419	420	421	422	423	424
425	426	427	428	431	432
433	436	437	438	439	440
441	443	444	445	446	447
448	449	451	453	455	456
457	458	459	460	461	462
463	465	468	469	470	471
472	473	476	477	478	479
480	481	483	484	485	486
487	488	501	502	503	505
506	507	508	509	511	515

516	517	518	519	520	521
522	523	524	525	526	527
528	531	532	533	536	537
538	539	540	541	543	544
545	546	547	548	549	551
553	555	556	557	558	559
560	561	562	563	565	568
569	570	571	572	573	576
577	578	579	580	581	583
584	585	586	587	588	

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT BUMP TBWMS (PROVIDE WALL STOP WHERE APPLICABLE)	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	VIEWER	698 (PROVIDE 2 @ ACCESSIBLE UNITS)	626	IVE

Hardware Group No. UHW-1.1

For use on Door #(s):
133

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	SURFACE CLOSER	4040XPT BUMP TBWMS (PROVIDE WALL STOP WHERE APPLICABLE)	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	VIEWER	698 (PROVIDE 2 @ ACCESSIBLE UNITS)	626	IVE

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: DOOR TO BE PREPPED FOR FUTURE AUTOMATIC OPERATOR USE. DOOR TO RECEIVE AUTOMATIC OPERATOR WITH ELECTRIC STRIKE
3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY SECURITY. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: DOOR TO BE PREPPED FOR FUTURE AUTOMATIC OPERATOR USE. DOOR TO RECEIVE AUTOMATIC OPERATOR WITH ELECTRIC STRIKE~~

~~3. CREDENTIALS, CARD READER, CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. UHW-1.2

For use on Door #(s):
121

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96LD RHO	626	SCH
1	EA	CYLINDER	PROVIDED BY OWNER	626	MED
1	EA	ELECTRIC STRIKE	8000 Series 12/24VDC FSE	630	HES
1	EA	AUTO OPERATOR	5700 SERIES	628	NOR
1	EA	RECEIVER KIT	AS REQUIRED		NOR
1	EA	TRANSMITTER KIT	AS REQUIRED		NOR
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	VIEWER	698 (PROVIDE 2 @ ACCESSIBLE UNITS)	626	IVE
1	EA	POWER SUPPLY	AL175UL		ALT
1	SET	WIRING DIAGRAMS	AS REQUIRED		

1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.
2. DOOR FUNCTION: WIRELESS TRANSMITTER TO RELEASE ELECTRIC STRIKE AND ACTIVATE AUTOMATIC OPERATOR. KEY OVERRIDE AVAILABLE.
3. ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. ~~(1. THE HARDWARE SUPPLIER SHALL COORDINATE THE ELECTRIFIED HARDWARE WITH ALL RELATED TRADES.~~

~~2. DOOR FUNCTION: WIRELESS TRANSMITTER TO RELEASE ELECTRIC STRIKE AND ACTIVATE AUTOMATIC OPERATOR. KEY OVERRIDE AVAILABLE.~~

~~3. CONNECTIONS TO THE OWNER'S NETWORK SHALL BE PROVIDED BY THE OWNER'S NETWORK. ALL OTHER ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.)~~

Hardware Group No. UHW-2

For use on Door #(s):

161A	161D	161F	161G	161H	165B
165C	165H	165K	165L		

Provide each PR door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		HARDWARE BY MANUFACTURER		

Hardware Group No. UHW-3

For use on Door #(s):

161B	161C	161E	165A	165D	165G
165J	165M	176C	176E		

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	ND40S RHO	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

PROVIDE HINGE PIN STOP TO AVOID CONFLICTS.

Hardware Group No. UHW-4

For use on Door #(s):

165E	165F	176A	176D	176F

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

END OF SECTION

SECTION 27 53 19 - EMERGENCY RESPONDER RADIO ANTENNA/REPEATER SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Furnish, install, and test a complete and operating Emergency Responder Radio Antenna/Repeater System.

1.02 SECTION INCLUDES

A. This Section includes the requirements for an Emergency Responder Radio Antenna/Repeater System for the purposes of assuring reliable communications by providing a minimum signal strength and minimum voice quality in 95% of all areas of the building.

B. Components Include
1. Bi-directional amplifiers (“BDA” or “BDAs”)
2. Donor antenna
3. Indoor coverage antennas
4. Distributed Antenna System (“DAS”)
5. Coaxial cable
6. Splitters and directional couplers
7. Backup power
8. All other equipment and components necessary for a complete and functioning Emergency Responder Radio Antenna/Repeater System.

1.03 RELATED CODES AND STANDARDS

A. All aspects of system design, installation, testing and maintenance shall comply with the current versions of the following:
1. NFPA 1 – The National Fire Code (including Annex O from 2009)
2. NFPA 70 – The National Electrical Code
3. NFPA 101, Life Safety Code
4. NFPA 72-07 National Fire Alarm Code
5. FCC 47 CFR Part 90.219: Private Land Mobile Radio, Use of Signal Boosters
6. Section 510 International Fire Code
7. TSB-88-B, The Telecommunications Industry Association's (TIA) Technical Service Bulletin 88
8. Equipment manufacturers’ installation and maintenance specifications

B. The requirements established by the AHJ in effect at the time of system installation supersede the specifications in this section. It is the contractor’s responsibility to assure the installed system complies with all currently applicable local, national and industry codes as adopted by the AHJ.

1.04 DEFINITIONS

A. Definitions:
1. Authority Having Jurisdiction ("AHJ"): The local authority responsible for establishing requirements for Emergency Responder Radio Coverage Systems consistent with local codes and policies.
2. Critical Areas: Spaces within a building that require an extra assurance of radio coverage. These areas include emergency command centers, fire pump rooms, exit stairs, exit passageways, elevator lobbies, standpipe cabinets and other areas deemed critical by the AHJ.
3. Contractor: The entity bidding the project.
4. Owner: The entity who commissioned the project and will own the finished building.
5. Bi-Directional Amplifier or "BDA": An electronic device designed to provide amplification of uplink and downlink channels of radio services. These devices can be configured for operation on specific narrow-band frequencies, on a specific frequency band or on multiple frequency bands.
6. Distributed Antenna System ("DAS"): A network typically consisting of coaxial cable, fiber cable, splitters, taps, couplers and antennas designed for delivering radio signals to and from spatially separated antenna nodes or other intentional radiators, such as leaky coaxial cable, within a building or area where traditional off-air signal delivery is compromised.
7. Backup Power Supply: A secondary power source to support uninterrupted system operation in case of a failure of the primary power source. This system is configured to automatically transfer its load upon failure and restoration of the primary power source.
8. Donor Antenna: An antenna installed and directed to intercept over-the-air downlink and uplink radio signals on one or more channels from a specific base station or fixed repeater facility. A donor antenna usually is located on a roof or other location were reliable signal reception can be achieved. This antenna conveys radio signals delivered to and from a distributed antenna system.
9. Emergency Responder Radio Coverage System: A two-way radio communication system installed to assure the effective operation of radio communications systems specifically for fire, emergency medical services or law enforcement agencies within a structure where radio reception may otherwise be too weak for reliable communications.
10. Delivered Audio Quality Definitions ("DAQ"): This is a universal standard adopted from TSB-88-B and often cited in system designs and specifications.
    a. DAQ 1: Unusable, speech present but unreadable.
    b. DAQ 2: Understandable with considerable effort. Frequent repetition due to noise/distortion.
    c. DAQ 3: Speech understandable with slight effort. Occasional repetition required due to noise/distortion.
    d. DAQ 3.4: Speech understandable with repetition only rarely required. Some noise/distortion
    e. DAQ 4: Speech easily understood. Occasional noise/distortion.
    f. DAQ 4.5: Speech easily understood. Infrequent noise/distortion.
    g. DAQ 5: Speech easily understood.

11. Active System Components: System components, such as amplifiers, that require power. These components typically are utilized to provide amplification or "gain" to signals on the system.

12. Passive System Components: These components introduce signal loss in an RF system. Splitters, combiners, taps, directional couplers and cable are examples of passive system components.
13. Passive InterModulation ("PIM"): Unwanted signals generated due to non-linear connections or junctions in an RF path.
14. FCC: Federal Communications Commission
15. OET 65 Standards: FCC's Bulletin 65 provides Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
16. Public Safety/First Responder: Public Safety or First Responder agencies which are charged with the responsibility of responding to emergency situations. These include, but are not limited to: law enforcement departments, fire departments, and emergency medical companies.
17. RF: Radio Frequency

1.05 Design Approval

Plans shall be submitted and approved by the AHJ prior to installation. The following information shall be provided by the system designer/Contractor:

1. Detailed drawings showing the location of the amplification equipment and associated antenna systems.
   a. System Block Diagram including the donor antenna(s), BDA(s), passive components and in-building antennas. Include the RF link budget.
   b. Overlay of the system design on building floor plan drawings
2. Manufacturer's data sheets on all equipment to be installed.

1.06 PERFORMANCE REQUIREMENTS

A. Frequencies
1. *Two* sets of frequencies are to be utilized on the system.
2. The following FCC-licensed facilities are to be carried on the system:

FCC Call Sign	Downstream/ Base-to-mobile Frequency	Upstream/ Mobile-to-base Frequency	Channel Bandwidth

3. Transmissions on each set of frequencies must individually meet the coverage, minimum signal and minimum voice quality requirements.
4. Frequency Changes: Equipment selected for this system must be capable of being configured to different frequency pairs in the Public Safety frequency bands. These changes may later be necessary due to future additions or optimization of radio systems maintained by the AHJ.
5. It is the responsibility of the contractor to confirm the frequencies in use with the AHJ before proceeding with the system installation.

B. Minimum Received Signal Levels
1. Downstream signals: -95 dBm; The minimum signal strength that shall be received inside the building.
2. Upstream signals: -95 dBm: The minimum signal strength that shall be received at the Authority's repeater site.

3. Received signals in the building and at the Authority's repeater facility shall have a minimum Signal-to-Noise ratio of 15 dB.
4. Minimum received signal levels must be maintained regardless of seasonal and occasional signal path propagation conditions including those caused by weather and seasonal foliage changes.
5. Donor antennas utilized for the system must be directional and directed toward the respective repeater(s).
6. The minimum isolation between the donor antenna and system antennas shall be 15 dB or higher as necessary to prevent system oscillation based on the operating parameters required to meet the minimum coverage requirements.

C. Coverage
1. Signals at or above the minimum levels are to be receivable to and from 95% of all areas within the building. Spaces or rooms defined as critical areas require 99% coverage. For purposes of this Section, 95% coverage is considered to be all areas of the building.
2. The contractor is responsible for providing a system design and installation that provides enhancement only to those areas of the building where existing off-air service does not meet the minimum levels as described above. Signal strength surveys to confirm coverage enhancement requirements are the responsibility of the contractor. Care must be taken in engineering a system that will not cause interference to the Authority's radio system outside the building.

D. Equipment Locations
1. BDA: Wall space has been allocated for system electronic and headend components, see the floor plan for location. The wall space is 4 feet wide by 8 feet tall.
2. Donor Antenna(s): A preferred antenna location on the building roof has been specified by the owner. The contractor is responsible for providing and installing the antenna(s), mounting hardware, roof penetration and conduit from the antenna mast to the Fire Control Room. Provide a 4" conduit from the room housing the BDA to the roof. At the roof level provide a weather-head on the conduit. Coordinate roof penetrations and sealing with the General Contractor.
3. Electronic components, including secondary power, shall be designed for operation in a NEMA 4 non-vented weather tight box. These components must be capable of reliable operation at temperatures ranging from -22 degrees F to +120 degrees F (-30 degrees C to +50 degrees C) minimum.

E. System Power Source
1. A dedicated, 120-volt, 20 A circuit has been specified as primary power for the BDA or any other required electronic components. If additional power is required at this or other locations such must be clearly specified as part of the submitted system design. The electrical contractor shall include the cost of additional power sources in the bid.
2. A secondary automatic transfer power source for all active electronic components in the system shall be provided. Supplier shall provide battery back-up for 2 hours of operation minimum.

F. Mode of Operation
The system shall be designed for continuous, always-on service. A malfunction alarm for the BDA shall be provided and connected to the building fire alarm system.

G. System Frequency Response

All cable and passive electronic components shall have a minimum pass band of 400 – 2700 MHz. Systems that utilize a higher band, 698-2700 MHz shall be permitted if the band falls within that range.

H. Survivability
1. Physical Protection: All wiring and cabling, with the exception of radiating cable and antenna jumper cables measuring less than 2 feet in length, shall be installed in conduit.
2. All exposed cable, including flexible jumper cables, shall be plenum rated, utilizing a jacket of non-halogenated, fire retardant polyolefin.
3. Survivability levels shall be verified with local AHJ prior to construction. A survivability level of 2 (2 hour rated cabling) is required unless otherwise indicated by the AHJ.

I. Compatibility
Provide class-A BDA.

J. RF Exposure
The system shall meet the RF exposure guidelines of FCC Bulletin OET 65.

1.07 SUBMITTALS

A. Submittal Requirements with Bid Response
1. Product Data: Submit the manufacturer datasheets for the following components:
a. Donor Antennas
b. Coverage Antennas and/or Radiating Cable
c. Coaxial Cable and Connectors
d. Passive Devices including Splitters, Taps, Combiners and Couplers
e. Bi-Directional Amplifiers (BDA)
f. Secondary Power Supplies
g. Surge Protection
2. Shop Drawings
a. System Block Diagram including the donor antenna(s), BDA(s), passive components and in-building antennas. Include the RF link budget for Uplink and Downlink Path. Provide all assumptions.
b. Overlay of the system design on building floor plan drawings
c. Overlay on floor plan drawings of the predicted signal strength within the coverage area indicating, at a minimum, the –95 dBm downlink (base to mobile) signal strength for all coverage areas.
d. Building elevation and plan views depicting the location of any outdoor antennas associated with the proposed system. Include the antenna centerline height above building, orientation, mounting method, cabling, conduit route and the location of all external grounding connections.
e. BDA and Secondary Power Supply installation. Include plan and elevation views indicating equipment dimensions, mounting methods, enclosure type, cable and conduit routing, voltage required, power required, label locations and required clearance from other equipment. Identify each piece of equipment by brand, model number and equipment type.
f. Drawings and block diagrams are to be provided in AutoCAD format and accompanied by PDF copies.

g. Shop drawings shall be 8.5 inch x 11 inch or greater, scaled or dimensioned, with dimensions or scale clearly noted. Floor plan drawings shall be 24 inch x 36 inch minimum with drawings scaled to legible size.
h. All components shall be consistently named or labeled for reference in other drawings, diagrams and tables.

3. Other Submissions
   a. Specify antenna grounding and surge protection in accordance with NEC Article 810 and these specifications.
   b. Specify the backup/secondary power source, and include calculations to ensure the backup power requirements as specified in this standard are met.
   c. List of Individuals Responsible for the system design, planning and installation along with their qualifications and experience.

B. Submittal Requirements Prior to the Start of System Installation
1. Documentation confirming the latest information from the AHJ of the frequencies to be supported by the system.
2. List of any approved system design changes required since the original bid and the reason for each change. This list includes any design changes required for approval by the AHJ.
3. Updated Product Data, Shop Drawings and Diagrams reflecting any changes.
4. Bill of Materials ("BOM")
5. Provide the names, addresses, and telephone numbers of service organizations that carry stock of repair parts for the system to be installed.
6. System Installation Schedule as approved by the Owner, General Contractor and AHJ.

C. Submittal Requirements at Project Close Out
1. As-Built Drawings of all items required and in the formats listed in item A and B above.
2. Test Reports
   a. In-Building Coverage Test Results
   b. Donor Antenna Isolation
   c. Spectrum Analysis Report demonstrating only the intended frequencies are being carried on the system.
   d. Spectrum Analysis Report demonstrating no spurious oscillations, PIM or other intermodulation products are being produced that would affect other services or system performance.
   e. Sweep test results of all coaxial cable runs
   f. System Malfunction Alarm and its connection to the fire alarm panel.
3. Record of system operating parameters including:
   a. Signal levels received at the donor antenna
   b. Signal levels at the input and output of the BDA
   c. BDA Gain Settings
4. Operation and Maintenance Data: Submit hardware and software manuals for all products including all features and operating parameters.
5. Warranty Documents:
   a. Submit for all manufactured components utilized in the system
   b. Submit Manufacturer's Extended Warranty
   c. Submit Contractor's System Warranty
6. Submit the agenda for the training class along with copies of handouts to be utilized in the class.

7. Compile the items listed in this section into a single Operations and Maintenance Manual to be provided in electronic format. Include drawings and block diagrams in Adobe Acrobat (.pdf) and in AutoCAD format. Include a section containing a copy of the latest maintenance, testing and reporting requirements of the AHJ.

1.08 QUALITY ASSURANCE

A. Minimum Qualifications of Personnel
   1. Engineering and Design:
      a. A valid Professional Engineering Certification and
         Certification of in-building system training issued by the manufacturer of the equipment being installed or
      b. Approval issued by the AHJ
      c. Include GROL requirement as stated by the latest IFC code.
   2. Installer Qualifications:
      a. Minimum five years of experience installing systems of similar scope and complexity
      b. Certified by the manufacturer of the BDA equipment to be installed

B. All equipment shall be UL listed and labeled, and in accordance with applicable NEMA and ANSI Standards.

C. All parts of racks and enclosures shall be welded or assembled with paint piercing ground washers, grounding strip and bonding jumper.

1.09 WARRANTY

The contractor shall warrant system performance as specified in this section for one year starting on the date of final system acceptance.

1.10 MAINTENANCE AND ANNUAL TESTING

A. The contractor shall provide the first full year of maintenance for the system. The term of this maintenance period begins on the date of final system acceptance.

B. Maintenance shall include
   1. 24-hour by 7-day emergency response within two hours after notification
   2. Annual testing

C. Annual Tests
   1. BDA Operating Parameters:
      a. Record signal and power levels
      b. Review self-diagnostics and other items as recommended by the manufacturer
      c. Note any parameter changes from previous tests, investigate causes
   2. Backup/Secondary Power Supply
      a. Record voltage and charging of batteries before testing under load

b. Test batteries under full load for at least one hour or until the integrity of the batteries can be determined.
3. Test system malfunction alarm and its connection to the fire alarm panel
4. Maintain documentation on-site with a backup copy off-site.

PART 2 PRODUCTS

1.02 MANUFACTURERS

Subject to compliance with the requirements of this Section, manufacturers of the products that may be utilized in the system include, but are not limited to, the following:

1. CommScope/Andrew
2. Cobham
3. PCTEL
4. Times Microwave
5. RFS – Radio Frequency Systems
6. Microlab/FXR
7. Bird Technologies
8. EMR Corp.
9. Galtronics
10. ADRF
11. Notifier

1.03 SYSTEM COMPONENTS

A. Donor Antennas

1. Electrical:
   a. Frequency band: covering the frequencies specified by the AHJ.
   b. VSWR ≤ 1.5:1
   c. Gain: ≥ 10.0 dBi
   d. Maximum Input Power: 100 watts
   e. Polarization: Vertical
   f. Front-to-back ratio: ≥ 15 dB
   g. Vertical Beamwidth: ≤ 30 degrees
   h. Horizontal Beamwidth: ≤ 60 degrees
   i. Impedance: 50Ω
2. Mechanical:
   a. Connector: 50Ω type N Female
   b. Mounting: Mast on a non-penetrating mount utilizing concrete block ballast
   c. Grounding/Bonding: Pursuant to NFPA 70 NEC Article 810 requirements
3. Environmental:
   a. Temperature: -40°C to +60°C
   b. Lightning Protection: Direct Ground
   c. Maximum Rated Wind Velocity: 125 mph

4. Antenna Cable:
    a. All exposed cable shall have a UV stable black jacket for protection from sunlight
    b. Cable feed to the BDA shall be ½" copper corrugated outer conductor foam dielectric coax.
    c. Weatherproofing: exposed connectors protected from the effects of weather
    d. Rigid conduit between the Donor location and BDA location shall be provided and installed by the contractor.

B. Omni-Directional In-Building Coverage Antennas
    a. Frequency band: 698-900 MHz
    b. VSWR ≤ 1.8:1
    c. Gain: ≥ 1.0 dBi
    d. Maximum Input Power: 25 watts
    e. Polarization: Vertical
    f. Vertical Beamwidth: ≥ 65 degrees
    g. Horizontal Beamwidth: 360 degrees
    h. PIM: < -150 dBc
    i. Impedance: 50Ω
2. Mechanical:
    a. Connector: 50Ω type N Female
    b. Mounting: ceiling mount or securely mounted above ceiling
3. Environmental:
    a. Temperature: -20°C to +70°C
    b. Plenum rated

C. Directional Coverage Antennas
1. Electrical
    a. Frequency band: 698-900 MHz
    b. VSWR ≤ 1.8:1
    c. Gain: ≥ 1.0 dBi
    d. Maximum Input Power: 25 watts
    e. Polarization: Vertical
    f. Vertical Beamwidth: ≥ 65 degrees
    g. Horizontal Beamwidth: 90 degrees - 180 degrees nominal
    h. PIM: < -150 dBc
    i. Impedance: 50Ω
2. Mechanical:
    a. Connector: 50Ω type N Female
    b. Mounting: ceiling or wall mount

3. Environmental:
    a. Temperature: -20°C to +70°C
    b. Plenum rated

D. Radiating Cable
1. Material:
    a. Nominal size: ½" or 7/8"
    b. Outer conductor: Corrugated copper
    c. Slot Design: milled, two rows
    d. Jacket Material: Non-halogenated, fire retardant polyolefin
    e. Dielectric Material: Foam PE
    f. Inner Conductor Material: Copper wire, copper tube or Copper-clad aluminum wire
    g. Mounting: Minimum clearance of 2" from walls or other structure, secured at intervals and with hardware pursuant to manufacturer's specifications
2. Electrical
    a. Frequency Range: 30 – 2650 MHz
    b. Impedance: 50Ω ± 1
3. Environmental:
4. Temperature: -20°C to +80°C

E. Foam Dielectric Cable
1. Material:
    a. Nominal size: ½" or 7/8"
    b. Outer conductor: Corrugated copper
    c. Dielectric Material: Foam PE
    d. Inner Conductor Material: Copper wire, copper tube or Copper-clad aluminum wire
2. Electrical
    a. Frequency Range: 30 – 2650 MHz
    b. Impedance: 50Ω ± 1
3. Environmental:
4. Temperature: -20°C to +80°C

F. Splitters, Combiners, Couplers, Taps, Coax Jumpers and Connectors:
1. Electrical
    a. Frequency Range: 698 – 2700 MHz
    b. VSWR ≤ 1.3:1
    c. Maximum Input Power: ≥50 watts
    d. PIM: < -150 dBc

e. Impedance: 50Ω

2. Mechanical:
   a. Connector: 50Ω type N Female
3. Environmental:
   a. Temperature: -20°C to +70°C

G. BDA: Bi-Directional Amplifiers utilized on the system must meet the following requirements:
   1. Electrical
      a. Frequency agility: The unit shall have the capability to change operating frequencies within the 700 – 800 MHz Public Safety Band as may be required due to licensing changes of the AHJ or actions of the FCC.
      b. Alarming Functions: The BDA shall be linked to the building's fire alarm panel and configured to signal an alarm in the event of a failure with the BDA or donor antenna system.
      c. The BDA shall have received FCC Certification prior to installation.
      d. The system must be compatible with both analog and digital transmissions.
      e. Automatic gain and level controls shall be integrated into the BDA with a minimum dynamic range of 60 dB, less any gain reduction setting.
   2. Mechanical
      a. All BDA components shall be housed in a single, NEMA4 cabinet. The cabinet must be waterproof and capable of dissipating all heat without the use of ventilation.
      b. The BDA cabinet shall be painted fire engine red and display the following labeling in bright yellow letters: "RADIO REPEATER" unless alternate labeling is specified by the AHJ.
      c. The name and telephone number of the vendor responsible for system maintenance also must be marked on the cabinet.
      d. If the BDA is not located in the same room as the fire alarm panel, a sign shall be placed at the fire alarm panel with the name and telephone number of the local Fire Department indicating that they shall be notified of any failures that extend past two hours.
      e. The cabinet shall be securely locked to prevent unauthorized access.
   3. Environmental
      a. The BDA, as installed in the approved NEMA4 cabinet, shall be designed for operating in temperatures ranging from -22 degrees F to +120 degrees F (-30 degrees C to +50 degrees C).

H. Power Supplies: At least two (2) independent and reliable power supplies shall be provided, one primary and one secondary.
   1. Primary Power: The primary power source shall be supplied from a dedicated 20 Ampere branch circuit. The presence of primary power shall be monitored by the BDA monitoring system and provide notification upon loss of primary power.

2. Secondary Power: The secondary power source shall be capable of operating the in-building radio system for at least 24 hours of 100% system operation. This system shall utilize a dedicated battery system or a self-starting generator with dedicated storage batteries.
   a. The battery system shall automatically charge in the presence of the external/primary power input.
   b. The secondary power system shall be engaged automatically upon loss of primary power.
   c. The secondary power system shall be contained in one NEMA 4 enclosure.
   d. An alarm shall be configured to signal failure of the battery charging system or if the battery charge falls below 70% of capacity.
3. Environmental
   a. The secondary power system, as installed in the approved NEMA4 cabinet, shall be designed for operating in temperatures ranging from -22 degrees F to +120 degrees F (-30 degrees C to +50 degrees C).

PART 3 EXECUTION

3.1 INSTALLATION

A. System Signal Wires, Power Conductors and Cables
   1. Wires and cables shall enter each equipment enclosure, cabinet or rack in such a manner that all doors or access panels can be opened and closed unobstructed by cables.
   2. Routing and Interconnection
      a. Wires or cables routed between cabinets, racks, and other equipment shall be installed in an approved conduit or cable tray that is secured to the building structure.
   3. All cable shall be sweep tested for detection of any faults prior to and after installation. Sweep results shall be recorded for future reference.
   4. Coaxial cable shall be carefully installed in strict compliance with the manufacturers' recommended procedures with special attention given to pulling tensions, bending radius and proper support.
   5. Coaxial antenna cabling, except for radiating cable, shall be installed in its own metallic conduit.
   6. All equipment, cable and components shall be installed and connected according to the OEM's specifications to insure correct installation and system performance.
   7. Coordinate all roof penetrations with Owner and/or roofing contractor.

3.2 GROUNDING

A. Ground and bond cable shields and equipment per Manufacturer's requirements and NFPA 70 NEC requirements.

B. The Donor antenna mast shall be grounded per NFPA 70 NEC requirements. Grounding blocks and surge protection shall be provided for outside coaxial cabling.

3.3 ACCEPTANCE TESTING

A. An initial set of system Commissioning Tests shall be performed for the Owner prior to final Acceptance Testing with the AHJ. The commissioning tests will include all tests outlined in Part 1.07 C.2., "Submittal Requirements at Project Closeout", "Test Reports".

B. Tests shall be made using frequencies close to the frequencies used by the appropriate emergency services. If testing is done on the actual frequencies, then this testing must be coordinated with the local Department unit. All testing must be done on frequencies authorized by the FCC. A valid FCC license will be required if testing is done on frequencies different from the licensed department frequencies.

C. Final Acceptance Test Procedures
Acceptance testing shall consist of the following tests or those tests as may be directed by the AHJ and local County emergency response.

1. Coverage Testing: For testing system signal strength and quality, the testing shall be based on the delivered audio quality (DAQ) system. A DAQ level below 3.4 shall be considered a failed test for a given grid cell. See Part 1.04, DEFINATIONS for descriptions of each DAQ level.
    a. Each floor of the building shall be divided into 20 grid divisions. Increase to 40 if there is a failure. Critical areas tested separately.
    b. The tests will be conducted by using a calibrated portable two-way radio of the latest brand and model as currently in use by the local Department.
    c. Small scale drawings (11 inch x 17 inch maximum) of the structure shall be provided by the Contractor for use and documentation of the test results. The plans shall show each floor divided into the grids as described above, and the results of any pre-testing. Each grid shall be labeled to indicate the DAQ result from the final acceptance testing.
    d. DAQ tests shall be made with the antenna held in a vertical position at 3 to 4 feet above the floor to simulate a typical portable radio worn on the belt or turnout coat pocket.
    e. A test location shall be selected near the center of each grid square. Once the test location of a grid area is selected, prospecting for a better spot within the area is permitted only within three feet (3') in any direction of the selected test location.
    f. The two-way radio will be utilized to transmit voice transmissions to verify communications to and from the outside area covered by the Department's radio system. For each grid location, the DAQ of the transmission shall be determined.
    g. A maximum of two non-adjacent areas will be allowed to fail the DAQ test.
    h. In the event that three or more of the grid test locations fail the test, the floor may be re-tested by creating a new grid consisting of 80 equal areas and test locations selected within each area. In testing the new grid, a maximum of four non-adjacent areas may fail the test. If the system fails the 80 area test, then the system must be revised to meet the coverage requirement.
2. Isolation and Spectrum Analysis Testing:
    a. Measurement of the isolation between the donor antenna(s) and the system antennas shall be performed utilizing a spectrum analyzer and appropriate signal generator.
    b. A Spectrum Analysis Report demonstrating only the intended frequencies are being carried on the system.

c. Spectrum Analysis Report demonstrating no spurious oscillations or intermodulation products are being produced that would affect other services or system performance.

3. Other tests as requested by the AHJ.

END OF SECTION