



Richard Y. Johnson & Son, Inc.

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DTCC No. DC900402002
Delaware Technical Community College
Betze Learning Commons
Bid Pac A – Contracts 1 thru 17
July 20, 2026

Addendum No. 3

Attention all Prospective Bidders:

The following clarifications, changes and /or additions shall by this reference be incorporated into the contract documents as though dully set forth therein.

Addendum No. 3 consists of:

RYJ Written directive (12 pages)

BSA+A Written Directive (3 pages)

Gipe Associates Written Directive (2 pages)

Specification Section 075200 – Hybrid Thermoplastic Membrane Roofing (25 pages)

Specification Section 087100 – Door Hardware (15 pages)

Specification Section 095113 – Acoustical Panel Ceiling (11 pages)

Specification Section 102226 – Operable Partitions (4 pages)

Specification Section 104413 – Fire Protection Cabinets (6 pages)

Specification Section 262726 – Wiring Devices (14 pages)

Structural Drawings (3 Drawings)

Architectural Drawings (8 Drawings)

MEP Drawings (8 Drawings)

Non – Technical Specifications

Section 000110– Table of Contents

Page 000110-3 – **Add.** “075200 - Hybrid Thermoplastic Membrane Roofing”

Page 000110-3 – **Add.** “095400 – Specialty Ceilings”

Page 000110-3 – **Remove.** “095423 – Linear Metal Ceilings”

Page 000110-4 – **Add.** “098411 – Wall Mounted Acoustical Panels”

Page 000110-4 – **Remove.** “098400 – Acoustic Room Components”

Page 000110-4 – **Add.** “102226 – Operable Partition”

Section 001116 – Advertisement for Bid

No Change - Bids are Due July 28, 2026 at 2:00pm and are to be read aloud at DTCC Owens Campus located at 21179 College Drive Georgetown, DE 19947 in the Theatre, in the Arts and Sciences Building.

Section 011100– Summary of Work

Bid Pac A – Contract 1 Demolition

Page 011100-6 – **Paragraph BB; Add to the end of Paragraph BB.** “Provide removal of underground piping and clean outs and supports including the saw cutting and removal of concrete to demo piping.”

Bid Pac A – Contract 4 Masonry Work

Page 011100-15 – **Delete Paragraph Y in its entirety.**

Bid Pac A – Contract 6 Carpentry & General Work

Page 011100-19 – **Paragraph A; Add to Paragraph A.** “102226”

Bid Pac A – Contract 10 Drywall/Metal Stud

Page 011100-30 – **Paragraph A; Add to Paragraph A.** “095113.01”

Bid Pac A – Contract 11 Acoustical Work

Page 011100-33 – **Paragraph A; Add to Paragraph A.** “095400, 098411”

Page 011100-33 – **Paragraph A; Delete from Paragraph A.** “095113.01, 095423, 098400”

Bid Pac A – Contract 14 Casework

Page 011100-38 – **Delete Paragraph L in its entirety.**

Bidders Questions + Clarification

***Note: Refer to previous addendums for any questions not listed below. Questions answered in previous addendums are not shown below.**

RFI No.	Description
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RFI 02	
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	Question 1:
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	Specification Division 26 and 27, there is no mention of structured cabling for CAT6 data cabling, data wall plates, CAT6 patch panels, UPS, network switches, CAT6 patch cables, or a rack.
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	o Question #1: Has this work been pulled out of the bid package?
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- o Question #2: Will DTCC be contracting a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?
- o Question #3: Will the awarded electrical contractor provide a dedicated circuit for the required rack mounted UPS?
- o Question #4: Will the awarded electrical contractor provide all grounding requirements for this rack?

Answer:

See answer below at the end of this RFI

Question 2:

Specifications Division 27 Section 27 13 23 Communications Optical Fiber Backbone Cabling

- o This section references single mode indoor/outdoor fiber optic cabling

♣ Question #1: Will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?

♣ Question #2: Who is responsible for providing the rack for the fiber optic patch panel?

Answer:

See answer below at the end of this RFI

Question 3:

Specification Division 28 only references an addressable fire alarm system

- o Question #1: Who is providing all access control, video surveillance and intrusion detection systems?

o Question #2: Will DTCC be contracting a vendor under state contract DTI240048-BLDG_SECURE for all access control and intrusion detection system work?

o Question #3: Will DTCC be contracting a vendor under state contract DTI240054-VIDEO_SURV for all video surveillance system work?

Answer:

See answer below at the end of this RFI

Question 4:

Specification Division 8 Section 08 71 00 Door Hardware

- o Question #1: On page 14 of 15 under section 08 71 00 you will find Hardware Group: 06 is the only hardware group to receive access control and electrified locking hardware. Hardware Group 06 states this hardware group is for Egress Stairwells. Please confirm this is correct.

Answer:

Access Control technology not in scope. To be revised in Addendum No. 03.

Question 5:

Drawing EP101 First Floor Plan – Power – New Work and EP102 Second Floor Plan – Power and Special Systems – New Work

- o Question #1: Division 8 Section 0871 00 Door Hardware showed Hardware Group 06 on all egress stairwell doors to receive access control. Drawing EP101 does not show access control on the drawings for stairwell egress door in Stairwell A (A1) or Stairwell B (B1). Please confirm if these two exterior doors will or will not receive access control and electronic door locking hardware.
- o Question #2: The exterior Receiving double door A110 is showing it will receive access control on this door, however this is not listed under the Division 98 Section 08 71 00 Door Hardware specification. Please confirm if this door will or will not receive access control and electronic door locking hardware.

o Question #3: Will DTCC be contracting a vendor under state contract DTI240048-BLDG_SECURE for all access control work?

o Question #4: This drawing shows multiple camera locations. Will Vivotek cameras be required for this project?

- o Question #5: If yes to the above question, can you provide the specific model numbers and quantities needed for each Vivotek camera?
- o Question #6: Will DTCC be contracting a vendor under state contract DTI240054-VIDEO_SURV for all video surveillance system work?
- o Question #7: This drawing shows multiple structured cabling CAT6 data drop locations and wireless access point locations. Will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?
- o Question #8: There is no indication on this drawing of any intrusion detection system devices, is this correct?
- o Question #9: There are multiple TV locations shown on this drawing. Will DTCC be providing the TV and associated wall mounting brackets?
- o Question #10: Who is responsible for installing TV's and associated wall mounted brackets?
- o Question #11: There are no structured cabling symbols near these TV locations, do they need CAT6 cabling or HDMI cabling to a workstation?
- o Question #12: Understanding A/V system speakers were removed, I do not see any A/V speakers being installed. Please confirm this is correct.

Answer:

See answer below at the end of this RFI

Question 6:

Drawing E201 image 4 Enlarged Plan – MDF C109 and image 7 Enlarged Plan – IDF A111

- o Question #1: There is a note which states "Data Rack (By Owner). Will DTCC be providing and installing this Data Rack or will the awarded security vendor be providing and installing this rack?
- o Question #2: Will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?

Answer:

See answer below at the end of this RFI

Question 7:

Drawing E202 image 1 Enlarged Plan – IDF B216

- o Question #1: There is a note which states "Data Rack (By Owner). Will DTCC be providing and installing this Data Rack or will the awarded security vendor be providing and installing this rack?
- o Question #2: Will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work

Answer:

See answer below at the end of this RFI

Question 8:

Drawing E304 Communications Riser Diagram

- o The schematic communications system riser diagram is showing two racks in the MDF C109, two racks in IDF A111 and two racks in IDF B216
- ♣ The notes near these racks state "data equipment racks by owner and horizontal wiring to voice/data outlets by owner.
- Question #1: Will DTCC be providing and installing this Data Rack or will the awarded security vendor be providing and installing this rack?
- Question #2: Will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?

Answer:

See answer below at the end of this RFI

Question 9:

Drawing E304 Communications Riser Diagram The schematic communications system riser diagram is showing single mode and multimode fiber optic cabinets by owner.

♣ Question #1: Will DTCC be providing and installing all single mode and multimode fiber optic cabinets and associated cabling?

♣ Question #2: Will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?

♣ Question #3: If yes to question #2, will the existing incoming fiber to the Betz Library from another building be reused or will this fiber optic cable need to be replaced?

Answer:

See answer below at the end of this RFI

Question 10:

Drawing E304 Communications Riser Diagram Drawing Notes:

o Question #1: Drawing notes #1, 2, 3 & 4 stated CAT 6 Cables by Owner. Provide Rough-in at drop location with blank faceplate. Will DTCC be providing and installing these CAT6 cables or will this require a vendor under state contract DTI250065-DATA_CBL for Data and Voice Structured Cabling to complete this work?

o Question #2: Drawing note #6 states Provide 3 pair (6 strand) single mode armored fiber optic cabling terminated in LC connectors. This note does not state this will be provided by owner, is this correct?

Answer:

See answer below at the end of this RFI

Question 11:

Drawing E503 Details Electrical

o Image #8 Communications Equipment Rack Receptacle Outlet Installation

♣ Question #1: Notes #2 states all low voltage data, voice, audio & video cables, devices jacks & terminations are provided under division 27, but the Division 27 specifications only references the fiber optic back bone and nothing about CAT6, voice, audio, & video cables. Can you please confirm whom is responsible to provide and install these structured cabling?

Answer:

See answer below at the end of this RFI

Question 12:

Drawing EDP101 shows the first floor plan – power and special system demolition, Drawing EDP102

shows the second floor plan power and special system demolition and Drawing ED201 shows enlarged

plans electrical and special systems demolition

o Question #1: Drawing ED201 General Notes #2 states “data outlets, racks/equipment, wireless access points, video surveillance cameras, speakers and security system shall be disconnected and relocated or removed by owner.” Should the awarded security vendor be responsible for removing this equipment or will DTCC remove this equipment themselves?

Answer:

See answer below at the end of this RFI

Answer: FOR RFI 02 QUESTIONS 1 thru 12.

DelTech confirms that the IT Division will work with State or other vendors for network cabling, cameras, audio visual, tech equipment, access points, etc. Demolition of items is to be done by Contract 1 Demolition with the safing off of electrical items by Contract 17 Electrical. Contract 17

Electrical shall provide grounding and dedicated receptacles to serve rack locations as shown on contract documents. Contract 17 Electrical shall also provide conduit and backboxes to data locations as shown on the contract documents. Contract 17 Electrical shall note the backbox associated with televisions drops to serve communications cabling by owner as shown on details sheet E504, with conduit back to associated MDF/IDF per communications riser. Armored fiber optic cable is to be provided and pulled under Contract 17 Electrical per Owner directive. The rack shall be provided by the Owner.

RFI 10

Question 1:

Plan A121, 122 missing ceiling tags.

Answer:

Refer to RCP LEGEND on A121 & A122 for standard ceiling finish patterns reflected in RCP layouts. Speciality ceilings are tagged for clarity.

Question 10:

Indicate where specification 09 54 00;2.3: Decorative Grids are located

Answer:

09 54 00 Decorative Grids to be removed from scope.

RFI 11

Question 2:

Is there a required or preferred Fire Alarm vendor for this project?

Answer:

Refer to 284621-2.3-A for fire alarm system manufacturer's specification.

RFI 12

Question 1:

Are we able to get some better clarity on the required heights of the interior column covers. With only sheet A301 to go by and also after reviewing 2nd floor ceiling plans it appears the column may fall under soffits in middle section of ceiling and it looks others are center on acoustical ceilings and APC01 ceiling which I believe is higher?

Answer:

Typical column cover height within APC-01 extents from Level 1 finish floor is 23'-10", however other locations within the Learning Commons vary and should be coordinated with learning stair platform elevations and noted wall location elevations. Penetration finish through APC-01 to be coordinated with ceiling trade.

RFI 13

Question 1:

Is the Mineral Wool & T Clip system Per detail 12/A353 part of Contract A-9. It should be since it is understood by Curtain Wall System Installers.

Answer:

Yes, correct Contract 9 is to provide on curtain wall system.

Question 2:

Please clarify the ownership of Armored Panels per details A452. Some is located behind P-Lam and some is behind GWB

Answer:

See revisions to Contract 14 summary of work this addendum; Contract 10 Drywall provides all bullet resistant panels as per Item Y.

Question 3:

Please clarify that ALL mineral wool is NOT owned by Drywall/Metal Stud contract. ACM assembly is owned by Roofing, Curtain Wall assembly is owned by Storefront

Answer:

Correct.

Question 4:

Plan A005 under 2 ½" indicates 3 5/8" metal stud and wall types D35, 36 are duplicated under 3 5/8" wall type. What is wall type ?? under 2 ½"? Wall type D44 is missing.

Answer:

To be answered in Addendum 4

Question 5:

Plan A111 & A112 indicate chase areas with wall type D30, which is drywall B/S. Is this correct, or are these walls to be completely finished prior to framing other walls?

Answer:

All chase walls to be partition type D36. Drawings in to be revised in Addendum No. 03

Question 6:

Is there a ledger support somewhere for Box Header per detail 6/S511. This Header will not be able to be continuous over 102'-0"

Answer:

See revised structural detail 6/S511 issued in Addendum No. 03

RFI 14

Question 1:

Can designation types be provided for the exit signs? There are 2 types on the fixture schedule, and none are labeled on the drawings.

Answer:

Refer to lighting fixture schedule remarks column-type Exit 2 is indicated for mechanical spaces such as the main mechanical room, and type Exit is provided everywhere else on the project.

RFI 15

Question 1:

Scope item Q states that the mason owns dampproofing and waterproofing membranes on the project. Can you please confirm that this is only at the foundations for the building and that the mason does not own the above grade AVB?

Answer:

Correct.

Question 2:

Scope Item Y calls for the mason to provide floor slab infills where masonry walls are demolished. This is already covered by the concrete contractor as their scope item MM. Can you please have Scope item Y removed from the masonry scope of work?

Answer:

See revisions to Contract 4 summary of work this addendum; Contract 3 Concrete Work is to provide.

Question 3:

Scope Item GG calls for the mason to provide selective demolition. There is already a demolition contractor on site, can they provide the masonry demolition and related shoring for the project? The mason can provide toothing as required for any rough cut openings provided by the demolition contractor.

Answer:

Provide as noted.

Question 4:

Scope Item U calls for miscellaneous masonry repairs such as repointing, crack repairs, and restoration, but their location and extent are not shown in a drawing set. Can this item either be removed from the mason's scope of work for bidding purposes or can there be an allowance cost assigned to this scope item to keep bidding fair and equivalent?

Answer:

Coordinating with Owner, will clarify in Addendum No. 04

Question 1:

UPS devices are specified to be provided for all ATC panels per 230900 2.8 A. Are these intended just for centralized equipment and routers/gateways, or does this also include ATC panels for unitary equipment?

Answer:

UPS devices shall be provided for all atc panels as specified including unitary equipment.

Question 2:

Are the BAS tie-ins for the power metering to be accomplished via a BACnet interface on the meters provided by the EC, or by contacts hardwired directly to a BAS controller? Does the BAS contractor also have to provide any of these meters, aside from the flow meter serving the hot water system?

Answer:

The BAS power metering tie-ins will need to be coordinated based on what is provided with the power meters. We would prefer a Bacnet interface on the meters, but this must be confirmed with the electrical contractor.

Question 3:

Schedules on M501 and M502 mention rebalancing existing equipment and adding a DPT for the Jason Building. Please clarify location of existing chilled water plant equipment and the Jason building relative to the Betze building.

Answer:

The existing central chilled water plant is in the Jason Building and the existing DPT sensor in the Betze Library currently interfaces with the existing secondary chilled water pumps in the Jason Building. Therefore, we are requiring the new DPT sensor to be interfaced with the existing chilled water pumps in the Jason Building.

Question 4:

Please confirm Energy Recovery Ventilator, Blower Coil Units, and Fan Coil units are intended to have field-installed controls provided by the BAS contractor.

Answer:

All energy recovery ventilators, blow coil units, and fan coil units are intended to have field-installed controls provided by the BAS contractor.

Question 5:

Are the VFDs for the ERV and heating water secondary pumps to be provided by the equipment manufacturers, or by the BAS contractor?

Answer:

The ERV unit shall be provided with VFD's by the equipment manufacturer. The secondary heating water pump VFD's may be provided by whoever the Contractor desires to provide the same. Regardless all VFD's must comply with the specifications including Bacnet cards, and Bypasses.

Question 6:

ERV schedule shows two supply fans and two exhaust fans. Is there one VFD per fan, or one per array?

Answer:

The quantity of VFD's per fans will be determined by whoevers equipment the mechanical contractor intends to utilize for the ERV units. This will need to be coordinated between the equipment supplier, the mechanical supplier and the atc subcontractor.

Question 7:

Floor plans show several zone sensors for ERV-1. Are all these zone sensors required to be hardwired directly back to the ERV controller, or can they be wired to a local controller and incorporate this programming via a software interlock to the unit?

Answer:

Space sensors may be wired to local controllers and the sequence shall be maintained by programming via software interlock to units.

Question 8:

Does the BAS contractor need to include any scope for the lighting control system other than installing communication wiring to the central lighting controller and integrating through BACnet?

Answer:

Space sensors may be wired to local controllers and the sequence shall be maintained by programming via software interlock to units.

Question 9:

Specification 284621 2.13 C indicated fire alarm system will be provided with a BACnet interface. Please confirm whether fire alarm system is intended to tie into the BAS.

Answer:

The fire alarm system shall tie into the BMS from the perspective of the Fire Fighters air handling unit override switch that is to be tied into the BMS and the fire alarm system.

Question 10:

Are motorized control dampers to be provided by the BAS contractor?

Answer:

As specified all motorized dampers and actuators are to be provided by the BAS contractor.

Question 11:

Would Belimo be an acceptable manufacturer for HVAC control valves?

Answer:

Belimo would be acceptable for control valves as long as they meet all specification requirements.

RFI 17

Question 1:

Are there any interior CMU walls that will be demo or altered? There are none noted on the drawings but the existing interior partitions lack details.

Answer:

There is no existing CMU within project scope to be demolished.

RFI 18

Question 1:

Please confirm which trade package is responsible to demolish and remove the underground DWV sanitary piping shown on PD101 NOTE 9. The plumbing demolition is included in contract #1 DEMOLITION but their scope does not mention this underground piping.

Answer:

See revisions to Contract 1 Demolition summary of work this addendum.

Question 2:

Please confirm which trade package is responsible for saw cutting the floor for the demolition of existing underground DWV piping on PD101

Answer:

Contract 1 Demolition.

RFI 19

Question 1:

Specificaon secon 07 53 23 EPDM Membrane calls for the membrane color to be Black, but the General Roof Notes, A. on A131 Roof Plan state White EPDM, please clarify?

Answer:

Roofing Membrane color to be black.

Question 2:

Specification section 07 72 00 Roof Accessories, paragraph 2.02 Roof Hatches and Vents A. 2. b. state the size to be 36" x 36" but note R11 on drawing A131 Roof Plan state 48" x 42", please clarify what size roof hatch is to be provided?

Answer:

Roof hatches to be 36" x 36", see revised sheet A131.

Question 3:

Contract NO. 7 Roofing Scope of work item U. and Specification section 07 72 00 Roof Accessories, has paragraph 2.02 Roof Hatches and Vents D. Smoke and Heat Vents, but we are not seeing any Smoke Vents shown on Drawing A131 Roof Plan, please clarify if any Smoke Vents are needed for the project?

Answer:

Smoke Vents are not within project scope.

Question 4:

Contract NO. 7 Roofing Scope of work item D. States "roof curbs", please confirm the roofing contractor only owns providing the roof hatch / vent curbs and all mechanical penetration curbs and support rail curbs are supplied by others and the Roofing Contractor only owns flashing?

Answer:

Correct.

RFI 20

Question 1:

Specification Table of Contents page 09 54 23 Linear Metal Ceilings: Should be referenced as 09 54 00 Specialty Ceilings

Answer:

See revisions to TOC and summary of work this addendum.

Question 2:

Specification Table of Contents page 09 54 36 Suspended Decorative Ceilings: Missing Specifications

Answer:

Not in scope, to be removed.

Question 3:

Specification Table of Contents page 09 84 00 Acoustic room components: Should be 09 84 11 Wall Mounted Acoustical Panels

Answer:

See revisions to TOC and summary of work this addendum.

RFI 21

Question 1:

Ref. drawing A142, Finish Plan – Level One, Corridor C. We note Corridors A, Corridor B and Lounge B109 are to be part of Alternate #2. Is Corridor C to also be included in Alternate #2? If no, please provide additional details depicting the transition is between Alternate #2 areas and the adjacent Corridor C area.

Answer:

Corridor C is to be included in Alternate #2. Drawing A142 has been updated accordingly.

Question 2:

Ref. drawing A142, Finish Plan – Level One, Learning and Monumental Stairs. We note the Learning and Monumental Stair finish tag do not include an alternate material selection. We will assume this work is to remain as part of the base bid, unless advised otherwise.

Answer:

That is correct, Learning and Monumental Stairs are not part of the Alternate #2.

RFI 22

Question 1:

Please provide more information in reference to the gate on the screen walls.

Answer:

To be clarified in Addendum No. 04

RFI 23

Question 1:

The double swing gate with panic bars won't work unless there is a middle post for the panic bars to latch to. Do they want (2) single swing gates side by side?

Answer:

(2) Single Swing gates side-by-side is acceptable.

Question 2:

Do they want the posts to be core drilled on top of the stone coping?

Answer:

Core Drilling acceptable granted finish meets standard requirements.

Question 3:

On drawing A100 note 2, is there a slight angle by the letter H by the 2'-8" mark in the fence line?

Answer:

Correct, see revised detail 2/A100.

Question 4:

Do they have a specific lock in mind to support the "district standard keyways"? Or would they provide the tumbler?

Answer:

To be answered in Addendum No. 04

RFI 24

Question 1:

Looking at the scopes of work and spec section 09 51 13.01 Seamless acoustic ceilings is listed under contract 11 acoustical work, this appears to be the APC-01 plaster acoustic ceiling system spec, but under contract 10 drywall metal stud item Q states to provide acoustic plaster ceilings. Which contract is responsible for this ceiling?

Answer:

Contract 10 Drywall/Metal Stud is to provide.

RFI 25

Question 1:

Ref. A141 and A701, A141 references a number of Schluter styles as the transition and A701 refers to Marble Threshold and rubber reducer, which is preferred?

Answer:

Detail 5/A701 removed. Marble thresholds not in scope.

Question 2:

Ref. A144, in Alt 2 + 3, should the same patterns be made from LVT as the epoxy in base bid? Should the corners be mitered?

Answer:

Alternates 2 and 3 floor patterns shall be similar to the Base Bid. The only difference is that some dimensions may vary to accommodate the LVT format size. If the Base Bid is not accepted, floor patterns for Alternates 2 and 3 will be provided as an ASI. No corners shall be mitered.

RFI 26

Question 1:

Most of the rooms, soffits, etc do not have a ceiling height noted. Unless I've missed it, I don't see a note that says all ceilings heights are to be x'-x" unless otherwise noted.

Answer:

All ceilings to be 9'-0" AFF U.N.O. General RCP Notes to be revised include note

Question 2:

Does the 'APC-01' ceiling noted for large open area on the 2nd floor get painted?

Answer:

See specification section 09 51 13.01 Seamless Acoustic Ceiling. This system does not receive paint.

RFI 27

Question 1:

Item S. Provide all wood and metal storage shelving in closets and other areas. P-lam and melamine shelving provided by Contract No. 14 Casework.

a. Nothing shown on drawings. (Storage Room A109?)

Answer:

To be answered in Addendum 4

Question 2:

Item AA. Provide knox box complete.

a. (1) Knox box location TBD?

Answer:

Provide (1) knox box. Location to be determined at a later date.

Question 3:

Item LL. Furnish the elevator sill angles and fasteners to be installed by Contract No. 3 Concrete.

a. Would the Contract A-5 steel subcontractor have these covered?

Answer:

Provide as noted.

Question 4:

JJ. Provide the elevator systems complete. Coordination with the Concrete, Masonry, Mechanical and Electrical. During construction the owner will need use of the elevator for the placement of furniture and supplies. Contractor is to provide access and temporary wall protection. Warranty will start at substantial completion.

a. Would the Contract A-5 steel subcontractor have these covered?

i. Hoist beam(s)

ii. Pit ladder

iii. Sump cover

Answer:

No, provide as noted.

RFI 28

Question 1:

If per this RFI Q&A - Question 4: Contract 6 note G rigid vinyl sheet wall finish, this is also noted in contract 13 will contract 13 supply & install the wall covering? Answer: See revisions to Summary of work this addendum; Contract 13 Caulking/Painting is to provide wall covering.

a. Does, QQ. Provide impact wall protection and corner guards complete also get removed from Contract A-6?

Answer:

No, impact and wall protection provided by Contract 6 Carpentry as noted under item QQ.

End of Addendum No. 3



Planning

Architecture

Interior design

Graphic Design

Project Management

ADDENDUM to CONTRACT DOCUMENTS

Date: 07/20/2026

To: All Bidders

From: BSAA

Copies: All Bidders
Others

Project Name: Stephen J. Betze LC Renovation

Project Number: 25.006

Subject: **ADDENDUM 3**

NOTICE:

Attention is called to the following item(s), effective as of the date above, which shall be added to, deleted from, or changed in the contract documents dated **06/30/2026** and any previously issued addenda, thereby incorporating these items into the contract documents.

Attach this Addendum to the project manual for this project. Work or materials not specifically mentioned herein are to be as described in the main body of the specifications and as shown on the drawings. Bidders shall acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject the bidder to disqualification.

The following clarification, changes and/or additions shall by this reference be incorporated into the contract documents as though fully set forth therein.

**Buck Simpers Architect
+ Associates, Inc.**

954 Justison Street
Wilmington, DE 19801

302.658.9300
fax 658.1125

www.simpers.com

A. GENERAL

Item No.		Item
A-1		Removed specification 08 35 13 – FOLDING DOORS in its entirety.
A-2		...

B. BIDDER QUESTIONS & CLARIFICATIONS – REFER TO ATTACHED Q&A LOG

C. MODIFICATIONS TO DRAWINGS

Item No.		Description:
C-1		SHEET A005, A100, A111, A112, A121, A122, A151, A601, - Sheet to be reissued in their entirety.
C-2		SHEET A101- DEMOLITION PLAN – LEVEL ONE - DETAIL 1/A101: Added note “EXISTING ELEVATOR, SHAFT WALL, AND ELEVATOR FOUNDATION/PIT TO BE DEMOLISHED COMPLETELY.
C-3		SHEET A131- ROOF PLAN - ROOF PLAN KEYNOTES: Keynote R11 description revised to “ROOF HATCH 36” X 36” WITH GUARDRAIL” - GENERAL ROOF PLAN NOTES; NOTE A REVISED TO “PROVIDE SINGLE PLY EPDM (BLACK) ROOFING SYSTEM (UNO)”.
C-4		SHEET A142 – FINISH PLAN – LEVEL ONE - CORRIDOR C - B112 FINISH TAG: Alternate No. 02 Finish information revised to the following: MB-1, LBT-2-3.
C-5		SHEET A301 – BUILDING SECTIONS - DETAIL 1/A301 – ACM column wrap height dimension provided for ACM column wraps underneath APC-01, dimension value: 23’-10”.
C-6		SHEET A701 – MISC. PLANS, SECTIONS & DETAILS - DETAIL 5/A701: Detail removed in its entirety.

D. MODIFICATIONS TO SPECIFICATIONS

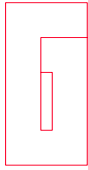
Item No.		Description:
D-1		08 71 00 – Door Hardware: Reissued specification with revised hardware set

		information.
D-2		09 51 13 – Acoustical Panel Ceiling: Reissued specification with revised ceiling type information.
D-3		10 22 26 – Operable Partitions: Specification Issued.
D-4		10 44 13 – Fire Protection Cabinets: Reissued specification with revised information.
D-5		07 52 00 – Hybrid Thermoplastic Membrane Roofing – Reissued specification with revisions.

E. ATTACHMENTS

Items	Date
Architectural Drawings	Adden. Date
MEP Drawings	Adden. Date
Structural Drawings	Adden. Date

END OF ADDENDUM 3



Gipe Associates, Inc.

CONSULTING ENGINEERS

W.O. #: 25053

ADDENDUM NO. 3 (July 20th, 2026)

RE: Stephen J. Betze Library & Learning Commons
GAI # 25053

FROM: Gipe Associates, Inc.
8719 Brooks Drive,
Easton, MD 21601

TO: Prospective Bidders

This addendum forms a part of the contract documents and modifies the original bidding documents dated June 30th, 2026 as noted below. Acknowledge receipt of this Addendum on the Bid Form. Failure to do so may subject bidder to disqualification.

This Addendum consists of two (2) pages, eight (8) drawings and one (1) revised specification section.

CHANGES TO DRAWINGS:

1. **REPLACE DRAWING SHEET MP101 – FIRST FLOOR PLAN –MECHANICAL PIPING – NEW WORK** with the Attached Revised Sheet due to the following revision:
 - Revised hydronic piping due to ceiling coordination.
2. **REPLACE DRAWING SHEET M101 – FIRST FLOOR PLAN –HVAC – NEW WORK** with the Attached Revised Sheet due to the following revision:
 - Revised exhaust air duct due to ceiling.
3. **REPLACE DRAWING SHEET M501 – SCHEDULES –HVAC** with the Attached Revised Sheet due to the following revision:
 - Revised hydronic finned tube radiation/panel schedule.
4. **REPLACE DRAWING SHEET E001 – LEGEND AND ABBREVIATIONS ELECTRICAL** with the Attached Revised Sheet due to the following revision:
 - Added surface raceway symbol.
5. **REPLACE DRAWING SHEET EP101 – FIRST FLOOR PLAN –POWER AND SPECIAL SYSTEMS – NEW WORK** with the Attached Revised Sheet due to the following revision:
 - Added surface raceway to furniture where needed.
6. **REPLACE DRAWING SHEET EP102 – SECOND FLOOR PLAN –POWER AND SPECIAL SYSTEMS – NEW WORK** with the Attached Revised Sheet due to the following revision:
 - Revised floor boxes in conference/study spaces to accommodate possible data outlets by owner.
7. **REPLACE DRAWING SHEET E504 – DETAILS ELECTRICAL** with the Attached Revised Sheet due to the following revision:

- Add Dual Channel Raceway Installation detail 8.
8. **REPLACE** DRAWING SHEET E505 – DETAILS ELECTRICAL with the Attached Revised Sheet due to the following revision:
- Add 6” pokethrough with space for communications wiring by owner to detail 1.

CHANGES TO THE PROJECT MANUAL:

1. **REPLACE** Specification Section 262726 “Wiring Devices” due to the following revision:
Added Article 2.15 “POKE-THROUGH ASSEMBLIES”. Existing Articles 2.15 and 2.16 revised to 2.16 and 2.17, respectively.

PAGE AD-(Addendum 3) - (Page2)

END OF ADDENDUM

1. Enclosure: Drawing sheets MP101, M101, M501, E001, EP101, EP102, E504, and E505.
2. Enclosure: Specifications section 26276

SECTION 07 52 00 - HYBRID THERMOPLASTIC MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY -

- A. Hybrid Thermoplastic membrane roofing over prepared substrate and insulation system.
 - 1. Roof Demolition and Preparation
 - 2. Insulation and Coverboard
 - 3. Wood Blocking, Intumescent Primer, Self Adhered Base Sheet
 - 4. Torch Applied Base Sheet in Field
 - 5. KEE Thermoplastic Cap Sheet adhered in 2-part Spatter Spray Adhesive
 - Option 1 – 30 year warranty
 - Option 2 – 40 year warranty
 - 5. Sheet Metal, Flashing and Trim
- B. This portion of the specification sets forth the general requirements and describes materials and workmanship for installing the two-ply thermoplastic/modified bituminous membrane hybrid roof system over prepared substrates.

1.3 RELATED SECTIONS

- A. Division 7 Section “Roof Insulation” for insulation above the roof deck.
- B. Division 7 Section “Modified Bituminous Membrane Re-Roofing Procedures”.
- C. Division 7 Section “Sheet Metal Flashing and Trim”.

1.4 REFERENCES

- A. American Society of Civil Engineers (ASCE):
 - 1. ASCE 7-16, Minimum Design Loads for Buildings and Other Structures.
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM D41, Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing.
 - 2. ASTM D312, Specification for Asphalt Used in Roofing.
 - 3. ASTM D451, Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.

4. ASTM D1079, Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
5. ASTM D1863, Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
6. ASTM D2178, Specification for Asphalt Glass Felt Used as a Protective Coating for Roofing.
7. ASTM D2822, Specification for Asphalt Roof Cement.
8. ASTM D2824, Specification for Aluminum-Pigmented Asphalt Roof Coating.
9. ASTM D4601, Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
10. ASTM D5147, Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
11. ASTM D6162, Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
12. ASTM D6163, Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
13. ASTM E108, Test Methods for Fire Test of Roof Coverings.

C. Factory Mutual Research (FM):

1. Roof Assembly Classifications.

D. National Roofing Contractors Association (NRCA):

1. Roofing and Waterproofing Manual.

E. Underwriters Laboratories, Inc. (UL):

1. Fire Hazard Classifications.

F. Warnock Hersey (WH):

1. Fire Hazard Classifications.

1.5 SYSTEM DESCRIPTION

- A. It is the intent of this specification to install a long-term, quality roof system that meets or exceeds all current NRCA guidelines as stated in the most recent edition of the NRCA Roofing and Waterproofing Manual. Please discuss any concerns with the Engineer and Roofing System Manufacturer.

1.6 DISCLOSURE OF MATERIALS

- A. The materials outlined herein are the materials that are to be used in this project. When a particular make or trade name is specified, it shall be indicative of the minimal standard of material required and to be used.

- i. The Architect reserves the right to be the final authority on the acceptance or rejection of any or all bids, or materials that has not met all specified requirement criteria.

1.7 SUBMITTALS

- A. Submit under provisions of Contract Documents, Division 1 and this section.
- B. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- C. Samples: Submit two (2) samples of each product specified.
- D. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- E. Manufacturer's Fire Compliance Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.
- F. Manufacturer's Wind Uplift Certificate: The manufacturer of the modified bitumen membrane must provide certification that the proposed roof system will be secured properly to the structure to meet or exceed the specific project wind uplift requirements per Section 1.16 Design and Performance Criteria.
- G. Manufacturer's Manufacturing Certificate: Certify that modified membrane materials to be used on this project conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- H. Manufacturer's Manufacturing Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001:2008 compliance certificate.
- I. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Testing must be performed at 77°F. Tests at 0°F will not be considered.
- J. Submit a copy of an unexecuted manufacturer's warranty for review.
- K. Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.
- L. Provide a sample of each insulation type.
- M. Shop Drawings:

1. Submit four (4) copies of manufacturer's shop drawings indicating complete installation details of tapered and flat insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, sumps, roof slopes, thicknesses, tapered crickets and saddles.
 2. Shop drawing shall include: Outline of roof, location of drains, sumps, complete board layout of tapered insulation components, thickness and the minimum and average "R" value for the completed insulation system.
- N. Design Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7-16, Method 2 for Components and Cladding, prepared by an engineer employed by the system manufacturer. In no case shall the design loads be taken to be less than those detailed in article 1.16 of this specification.

1.8 QUALITY ASSURANCE & QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 12 years documented experience and having ISO 9001:2008 certification.
- B. Manufacturer: The manufacturer must also have current ISO 9001:2015 certification for the manufacturing of the products to be utilized on this project.
- C. Installer: Company specializing in modified bituminous roofing installation with a minimum 5 years experience and certified by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- D. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work and at any time roofing work is in progress. Maintain proper supervision of workmen. Maintain a copy of the specifications in the possession of the Supervisor/Foremen and on the roof at all times.
 1. Maintain a copy of the Contract Documents in the possession of the Supervisor/Foreman and on the roof at all times.
- E. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
 1. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- F. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner has the right to hire a qualified contractor and backcharge the original contractor.
- G. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.9 PRE-INSTALLATION CONFERENCE

- A. Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.
- B. Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing which must precede or follow roofing work (including mechanical work if any), Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities.
- C. Objectives of conference to include:
 - 1. Review foreseeable methods and procedures related to roofing work.
 - 2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
 - 3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
 - 4. Review roofing system requirements (drawings, specifications and other contract documents).
 - 5. Review required submittals both completed and yet to be completed.
 - 6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - 7. Review required inspection, testing, certifying and material usage accounting procedures.
 - 8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not mandatory requirement).
 - 9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
 - 10. Review notification procedures for weather or non-working days.
- D. The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
- E. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved the satisfaction of the Owner and Engineer of Record. This shall not be construed as interference with the progress of Work on the part of the Owner or Engineer of Record.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to ensure no possibility of significant moisture exposure. Store rolls of felt and other sheet materials on pallets or other raised surface. Stand all roll materials on end. Cover the roll goods with a canvas tarpaulin or other breathable material (not polyethylene).
- C. In accordance with the manufacturer's recommendations, immediately remove the plastic wrapping on the roof recovery boards and cover with a watertight, ventilated enclosure (i.e. tarpaulins). Prevent the formation of condensation on the boards.
- D. Do not leave unused materials on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.
- E. It is the responsibility of the contractor to secure all material and equipment on the job site. If any material or equipment is stored on the roof, the contractor must make sure that the integrity of the deck is not compromised at any time. Damage to the deck caused by the contractor will be the sole responsibility of the contractor and will be repaired or replaced at his expense.
- F. Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).

1.11 MANUFACTURER'S INSPECTIONS

- A. When the project is in progress, the roofing system manufacturer will provide the following:
 - 1. Keep the Architect informed as to the progress and quality of the work as observed.
 - 2. Provide job site inspections a minimum of three (3) days a week.

1.12 PROJECT CONDITIONS

- A. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.13 SEQUENCING AND SCHEDULING

- A. Sequence installation of modified bituminous sheet roofing with related units of work specified in other sections to ensure that roof assemblies including roof accessories, flashing,

trim and joint sealers are protected against damage from effects of weather, corrosion and adjacent construction activity.

- B. Fully complete the installation of insulation system and base roofing ply assembly, and/or the installation of the modified bituminous membrane roof ply each day. Phase construction between the base roofing ply and modified membrane roof ply (top ply) is acceptable.

1.14 WARRANTY

- A. Upon completion of installation, and acceptance by the Architect, the manufacturer will supply to the Owner a single-source, thirty (40) year (NDL) warranty. This warranty shall cover the roof system, and all surfacing's. Warranty will include the roof systems, modified bitumen base flashings and the transition between all systems.
- B. Installer will submit a minimum of a three (3) year warranty to the manufacturer with a copy directly to Owner.
- C. At the request of the Owner, the roofing system manufacturer shall provide the Owner, or his representative, with an annual inspection of the roofing system. This period shall be for the duration of the delivered warranty period.

1.15 SITE CONDITIONS

- A. Field measurements and material quantities:
 - 1. Contractor shall have SOLE responsibility for accuracy of all measurements, estimates of material quantities and sizes, and site conditions that will affect work.
- B. Existing Conditions:
 - 1. Building space directly under roof area covered by this specification will be utilized by on-going operations. Do not interrupt Owner operations unless prior written approval is received from Owner.
- C. Waste Disposal:
 - 1. Do not re-use, re-cycle or dispose of materials except in accordance with all applicable regulations. The use of products is responsible for proper use and disposal of product containers.
- D. Safety Requirements:
 - 1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
 - 2. Comply with federal, state, local and Owner fire and safety requirements.
 - 3. Advise Owner whenever work is expected to be hazardous to Owner, employees, and/or operators.

4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
5. Maintain fire extinguisher within easy access whenever power tools, roofing kettles, fuels, solvents, torches and open flames are being used.

1.16 DESIGN AND PERFORMANCE CRITERIA

A. Uniform Wind Uplift Load Capacity

1. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
 - a. Design Code: ASCE 7-16, Method 2 for Components and Cladding.
 - b. Category III Building with an Importance Factor of 1.0.
 - c. Wind Speed: 129 mph
 - d. Exposure Category: C
 - e. Roof Pitch: 1/4 inches per foot
 - f. Topographic Factor: 1.00

2.	Zone	Design Uplift Pressures	Length/Width
	Zone 1	46.6 psf	
	Zone 2	59.0 psf	16'L X 10"W
	Zone 3	77.7 psf	5'8"W X 16'10"L.

Fasteners: 11 fasteners per 4 ft by 8 ft board in **Zone 1**, 17 fasteners per 4 ft by 8 ft board in **Zone 2**, 22 fasteners per 4 ft by 8 ft board in **Zone 3**.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. When a particular trade name or performance standard is specified it shall be indicative of the minimum standard required. Product names for the materials used in this section shall be based on performance characteristics of the modified bitumen roof system manufactured by The Garland Company, Cleveland, OH, and shall form the basis of design for these contract documents.
- B. Provide primary products, including each type of roofing membrane, base flashings, flashing membrane ply and miscellaneous flashing materials from a single source roof manufacturer.

Provide secondary products (insulation, recovery board, etc.) only as recommended by the roof manufacturer of primary products for use with the roof system specified.

- C. Any item or materials submitted as a substitution to the basis of design manufacturer specified, must be submitted by the bidding Contractor and must comply in all respects as to the quality and performance of the brand name specified. The Architect shall be the sole judge as to whether or not an item submitted as a substitute is truly equal. Should the Contractor choose to submit a substitute product, he shall assume all monetary or other risk involved, should the Architect find the substitution unacceptable.
- D. The following manufacturers are acceptable, providing they meet these specifications and the minimum standards stated.
 - a. The Garland Company, Inc. (Basis of Design)
 - b. Tremco, Inc.
 - c. SR Products

2.2 DESCRIPTION

- A. Modified bituminous roofing work including but not limited to:
 - 1. Prior to installing the insulation system on the roof deck, repair or replace any defects in accordance with the project specifications.
 - 2. On all exposed and concealed wood nailers/blocking/insulation stops, Apply one (1) coat of intumescent primer at ½ gallon per square covered with one (1) ply SBS self-adhering fire retardant modified membrane sheet fully adhered to all exposed wood blocking.
 - 3. Installation of polyisocyanurate insulation and recovery board over the properly prepared roof deck in accordance with Division 7 Roof Insulation Section.
 - 4. Self-Adhered Base Flashing Ply: One (1) ply of 110 mil thick SBS fiberglass reinforced, self-adhering modified base sheet fully adhered to any exposed wood surfaces that need to be waterproofed.
 - 5. Base Roofing Ply: One (1) ply of 110 mil thick SBS Torch Grade Base Sheet fully adhered to approved torchable insulation with roofer's torches.
 - 6. Base Flashing Ply: (1) ply of 110 mil thick SBS Torch Grade Base Sheet fully adhered to approved torchable insulation with roofer's torches.
 - 7. Thermoplastic Inter-ply Foam Adhesive: two-component, low rise, solvent free, polyurethane foam adhesive.
 - 8. Thermoplastic Membrane Roofing Ply: 60 mil thermoplastic cap sheet roofing membrane modified with Ketone EthyleneEster (KEE) reinforced with a polymer coated polyester scrim; polyester fleece bonded to the backside.

9. Thermoplastic Flashing Adhesive: acrylic, pressure sensitive, solvent-free adhesive designed for non-fleeceback KEE membranes.

10. Thermoplastic Membrane Flashing Ply: 60 mil, non-fleeceback thermoplastic cap sheet roofing membrane with Ketone EthyleneEster (KEE) reinforced with polymer coated polyester scrim.

2.3 BITUMINOUS MATERIALS

- A. Asphalt Primer: V.O.C. compliant, ASTM D-41.
- B. Asphalt Roofing Mastic: V.O.C. compliant, ASTM D-2822, Type II.
- C. Flashing Adhesive and Temporary Tie-Off mastic
- D. Elastomeric Asphaltic Sealant

2.4 THERMOPLASTIC MATERIALS AND ACCESSORIES

- A. Thermoplastic Inter-ply Foam Adhesive: two-component, low rise, solvent free, polyurethane foam adhesive.
- B. Thermoplastic Flashing Adhesive: pressure sensitive, solvent-free adhesive designed for non-fleeceback KEE membranes.
- C. Thermoplastic Accessories: KEE factory welded, non-fleeceback, reinforced membrane compliant with ASTM D 6754 standards.
 - a. Universal Conical Boot
 - b. Split Pipe Boots (1" to 6")
 - c. Square Split Boot (2" x 2", 3" x 3", 4" x 4", 5" x 5", 6" x 6")
 - d. Inside Corner
 - e. Outside Corner
 - f. T-Joint Cover
- D. Thermoplastic Mastic: white, polyether, Zero VOC trowel grade mastic for cold applied applications.
- E. Thermoplastic Mastic Sealant.

2.5 SHEET MATERIALS

- A. Base Roofing Ply:
 - 1. 110 mil SBS fiberglass reinforced self-adhering modified base sheet with the following minimum performance requirements according to ASTM D-5147.

Properties (Finished Membrane):
Tensile Strength (ASTM D-5147)
2 in/min. @73.4 ± 3.6°F

MD 75 lbf/in XD 50 lbf/in

Tear Strength (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 105 lbf	XD 100 lbf
Elongation at Maximum Tensile (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 5.0%	XD 5.0%
Low Temperature Flex (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	0°F	
Thickness :	100 mils	

B. Base Roofing Ply

1. 110 mil SBS Torch Grade Base Sheet with woven fiberglass scrim reinforcement with the following minimum performance requirements according to ASTM D-5147.

Properties: (Finished Membrane):		
Tensile Strength (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 210 lbf/in	CMD 210 lbf/in
Tear Strength (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 250 lbf	CMD 250 lbf
Elongation at Maximum Tensile (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 4.0%	CMD 4.0%
Thickness :	110 mils	
Post-Consumer Recycled Content :	6%	

C. Base Flashing Ply:

1. 110 mil SBS Torch Grade Base Sheet with woven fiberglass scrim reinforcement with the following minimum performance requirements according to ASTM D-5147.

Properties: (Finished Membrane):		
Tensile Strength (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 210 lbf/in	CMD 210 lbf/in
Tear Strength (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 250 lbf	CMD 250 lbf
Elongation at Maximum Tensile (ASTM D-5147)		
2 in/min. @ 73.4 ± 3.6°F	MD 4.0%	CMD 4.0%
Thickness :	110 mils	
Post-Consumer Recycled Content :	6%	

- E. Thermoplastic Membrane Field Ply: (40 Year Warranty Option)
1. 60 mil thermoplastic cap sheet roofing membrane modified with Ketone EthyleneEster (KEE) reinforced with a polymer coated polyester scrim; polyester fleece bonded to the backside ASTM D 6754,

Breaking Strength (ASTM D 751)	375 lbf 1668 N
Tear Strength (ASTM D 751)	150 lbf 667N
Elongation at Break (ASTM D5147)	40%
Low Temperature Flexibility (ASTM D 2136):	Passes -40°F (-40°C)
Puncture Resistance (ASTM D 751)	190 lbs.
Factory Seam Strength (ASTM D 751, Grab Method)	645 lbf. Min.
Thickness	60 mils
Accelerated Weathering Test after 5000-H Fluorescent/Condensation Exposure (ASTM G 154)	

- F. Thermoplastic Membrane Flashing Ply: 60 mil, non-fleeceback thermoplastic cap sheet roofing membrane with Ketone EthyleneEster (KEE) reinforced with polymer coated polyester scrim.
ASTM D 6754.

Breaking Strength (ASTM D 751)	375 lbf	1668 N
Tear Strength (ASTM D 751)	MD 145 lbf	XD 200 lbf
Elongation at Break (ASTM D 751)	MD 30%	XD 35%
Elongation at Break, strip	> 90% of original	
Low Temperature Flexibility (ASTM D 2136):	Passes -40°F (-40°C)	
Thickness	60 mils	

- G. End Lap Seam Stripping Ply
1. 60 mil, six (6) inch wide unreinforced thermoplastic membrane modified with Ketone EthyleneEster (KEE) for use as a stripping ply to cover a seam in the KEE-STONE FB 60 system and to field wrap difficult to flash penetrations.

2.5 SURFACINGS

- A. Thermoplastic Modified Membrane Roofing Cap Ply: White thermoplastic membrane modified with Ketone EthyleneEster (KEE).
 - a. Reflectivity0.87 min (initial)
 - b. Emittance.....0.88 min (initial)
 - c. SRI.....110 min (initial)

2.6 RELATED MATERIALS

- A. Roof Insulation and Recovery Boards: In accordance with Division 7 Roof Insulation Section.
- B. Roof Insulation Fasteners: In accordance with Division 7 Roof Insulation Section.
- C. Nails and Fasteners: Non-ferrous metal or hot dipped galvanized fasteners complying with ASTM A153 and connectors complying with ASTM A653, Class G185; Type 304 or Type 316 stainless steel fasteners and connectors shall be used with new generation of pressure-treated wood; Nails and fasteners shall be flush-driven through flat metal discs of not less than one (1) inch diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than one (1) inch diameter are used.
- D. Metal Discs: Flat discs or caps of zinc-coated sheet metal not lighter than twenty eight (28) gauge and not less than one (1) inch in diameter. Form discs to prevent dishing. Bell or cup shaped caps are not acceptable.
- E. Metal Flashing Sheet: Metal flashing sheet is specified in Section 07 60 00 - Sheet Metal Flashing and Trim.
- F. Lead Flashing Sheet: Meets Federal Specification QQ-L-201, Grade B, four pounds per square foot.
- G. Metal Termination Bars:
 - 1. Shall be heavy flat bar aluminum unless otherwise recommended by membrane manufacturers.
 - 2. Material shall be .125" x 1" (minimum) aluminum conforming to ASTM B-221, mill finish.
- H. Protection and Walkway Pads: Recycled rubber (97% recycled rubber), anti-skid surface pads, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, ½ inch thick, minimum.
 - 1. Minimum Pad Size: 3'-0" x 3'-0"
- I. Primer: Pro-Stop FR or approved equal; a water-based, non-corrosive intumescent primer used on the wood components

- J. Primer: Prime all exposed metal, lead sleeves and lead drain pans, wood and concrete block surfaces with asphalt primer compatible roof system material and as manufactured, supplied and recommended by roof system manufacturer.
- K. Urethane Sealant: One part, non-sag sealant as recommended by the membrane manufacturer for moving joints.
- L. Non-Shrink Grout: Use an all weather fast setting chemical action concrete material to fill pitch Pans.
- M. Self Adhering Primer: polymer emulsion-based primer designed to improve the adhesion of self-adhered membranes **(to be used prior to torch application where exposed wood blocking is found).**
- N. Intumescent Primer: water-based, non-corrosive intumescent primer used on the wood components of Garland roof assemblies. When applied to flammable substrates then exposed to high temperatures and flame the primer swells up and creates a char-barrier helping to prevent further spread of the fire and smoke.
- O. New Drains: Existing drains are to be replaced. The new drains shall be J.R. Smith, or equal, and match existing size and configuration. New drains shall be a complete assembly having new drain bowls, deck clamps, threaded receivers, and cast iron strainers. Drains shall be installed prior to or during the roof installation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate surfaces to receive modified bituminous membrane roof system and associated work and conditions under which roofing will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to the manufacturer.
- B. Prior to installing the finish modified membrane roofing ply, the contractor must notify the roof system manufacturer representative, and Owner's representative, to examine the roof area for high and low spots. It may be necessary to mist the roof with water to identify the problem areas. The contractor will correct all problem areas identified. This examination should take place no less than 24 hours in advance of installing the finished membrane.**
- C. Verify that deck surfaces and project conditions are ready to receive work of this section.
- D. Verify that deck is supported and secured to structural members.
- E. Verify that deck is clean and smooth, free of depressions, projections or ripples, and is properly sloped to drains or level as shown in the project documents. Clean roof deck of dirt, debris, water and snow.

- F. Verify that adjacent roof members do not vary more than 1/4 inch in height.
- G. Verify that deck surfaces are dry, free of snow or ice, not deteriorated, do not have bacterial growth, and are structurally sound.
- H. Confirm that moisture content within the wood blocking and nailers does not exceed twelve (12) percent by moisture meter tests.
- I. Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that wood cant strips, wood nailing strips and reglets are set in place. Verify that all roof curb heights are satisfactory and that the wood blocking height along the perimeter of the building and/or roof levels is satisfactory to provide positive roof pitch away from the building edge.
- J. Contractor is responsible to verify existing substrate and structure is sloped as stated in/on the project documents prior to installation of insulation system. All defects in roof pitch to be accommodated with tapered insulation to insure a positive pitch to all roof drains.

3.2 PREPARATION - REMOVAL

- A. Remove existing roof system(s), counter-flashings, roof flashings, and all accessories back to the roof deck and masonry walls.
- B. Remove all existing scupper assemblies and install new scupper assemblies. New scuppers shall be in accordance with the above specification.
 - 1. Prior to beginning work, contractor shall verify/test that existing roof drains are in working, or non-working, order. If the drains are in non-working order, the Owner shall address the non-working drain to working conditions. If the drains are in working order, then the contractor will be required to maintain, and deliver, the drains back to the Owner in working order.**
- C. Clean substrate of debris and other substances detrimental to roofing installation according to the roof system manufacturer's written instructions. Remove sharp objects.
- D. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Use roof drain plugs as required to prevent materials from entering and clogging roof drains and conductors. Remove roof drain plugs at the end of each work day or when rain is forecasted. Replace or restore other work damaged by installation of the modified bituminous roofing system.
- E. All existing roofing shall be torn off and removed completely down to the roof structure decking. Dispose off-site in dumpsters.
- F. Tear off only enough roofing, which can be successfully reroofed, in a single day.
- G. Fully complete the installation of insulation system and base roofing ply assembly, and/or the installation of the modified bituminous membrane roof ply each day. Phase construction

between the base roofing ply and modified membrane roof ply (top ply) is acceptable.

3.3 PREPARATION – METAL DECK

- A. Clean substrate of debris and other substances detrimental to roofing installation according to the roof system manufacturer's written instructions. Remove sharp objects.
- B. If bad corroded, deteriorated, damaged or unsound decking is present, it shall be removed and replaced using the same materials as the original, unless otherwise specified.
- C. As required, install preformed sound absorbing insulation strips in acoustic deck flutes in accordance with manufacturer's instructions.

3.4 WOOD PROTECTION

- A. Apply one (1) coat of the specified intumescent primer to the properly prepared wood substrates at an application rate of ½ gallon per 100 sf. Allow to dry and cure before applying the self-adhering fire retardant membrane.
- B. Install one (1) layer of the specified self-adhering fire retardant membrane to the properly prepared and primed wood substrates to protect the wood from the torch application. Install the ply in a shingle type manner.

3.5 DRAIN INSTALLATION

- A. All existing drains shall be water tested. All existing drains shall be removed and replaced, unless noted otherwise. New drains shall be accordance with project documents and specified above. Sizes and configuration shall match existing. Drains will have new deck clamps, drain bowls, adjustable drains as needed, threaded receivers, and cast iron metal strainers. Drains shall be installed prior to or during the roof installation. **Drains shall be set to the proper height above the roof deck to allow for a tapered insulation sump having ½" per foot slope.**

3.6 GENERAL INSTALLATION REQUIREMENTS

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
- C. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of the modified bituminous roofing system.
- D. Coordinate installation of roofing system components so that the insulation is not exposed to precipitation or left exposed overnight. Provide cut-offs at end of each day's work to cover exposed ply sheets and insulation with two (2) plies of #15 organic roofing felt with joints

- and edges sealed with roofing cement and other jointly agreed upon tie-in detail. Remove cut-offs immediately before resuming work.
- E. Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
 - F. Apply roofing materials as specified by manufacturer's instructions.
 - 1. Keep roofing materials dry before and during application.
 - 2. Begin and apply only as much roofing in one day as can be completed that same day.
 - G. Cut-Offs/Envelope Waterstops: At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Install waterstop/temporary flashing a minimum of 6 inches under face edge of insulation and wrapped up face and back a minimum of 6 inches from the face in asphalt mastic at $\frac{3}{4}$ pounds per foot, top dress waterstop with asphalt mastic.
 - H. **All exposed wood blocking and/or sheathing where noted is to be primed with the specified PRO-STOP FR PRIMER or approved equal at a rate of .5 gallons per square and allowed to dry. All wood is to be covered with SA membrane extending beyond the wood edges a minimum of 2" in all direction.**
 - I. A minimum two-hour fire watch is required for each day that torch-applied membranes are installed unless noted otherwise by Owner. Keep an approved rated fire extinguisher every 3,000 square feet maximum on the roof. The fire extinguisher shall be placed in a central location in that area where all workers know where it is and how to operate in properly.

3.7 INSULATION INSTALLATION

- A. Refer to Roof Insulation specification Division 7 Section 07 22 00 for complete installation requirements.
- B. Deck type: Metal Deck.
- C. Insulation: Tapered and Flat, rigid polyisocyanurate insulation with a minimum total thickness as specified, and a gypsum core recovery board.
- D. Insulation Attachment: Polyisocyanurate insulation shall be mechanically attached to the metal roof decks and subsequent layers of the polyisocyanurate insulation shall be installed in the specified insulation adhesive in accordance with manufacturer's recommendations. The recovery board shall be installed over the polyisocyanurate insulation system in the specified insulation adhesive in accordance with manufacturer's recommendations.
- E. Joints of Recovery Board: Before installing the torch-applied modified bitumen roof system over the recovery board, ALL joints of the recovery board must be sealed with a 3-course application of mesh and cold-applied, solvent free adhesive or specified roof board joint tape.

3.8 BASE ROOFING PLY INSTALLATION:

- A. Install the specified Base Roofing Ply to the properly prepared substrate. Shingle in proper direction to shed water on each area of roofing.
- B. To an approved recovery board, lay out the roll in the course to be followed and unroll six (6) feet.
- C. Using a roofing torch, heat the surface of the coiled portion until the burn-off backer melts away. At this point, the material is hot enough to lay into the substrate. Progressively unroll the sheet while heating and press down with your foot to insure a proper bond.
- D. After the major portion of the roll is bonded, re-roll the first six (6) feet and bond it in a similar fashion.
- E. Repeat this operation with subsequent rolls with side laps of four (4) inches and end laps of eight (8) inches.
- F. Give each lap a finishing touch by passing the torch along the joint and spreading the melted bitumen evenly with a rounded trowel to insure a smooth, tight seal.
- G. Extend underlayment two (2) inches beyond top edges of cants at wall and projection bases.
- H. Install base flashing ply to all perimeter and projection details.

3.9 THERMOPLASTIC MEMBRANE INSTALLATION

- A. Install specified Thermoplastic Cap Roofing Ply as described below.
- B. Prior to installing the thermoplastic cap roofing ply, the contractor must notify the roof system manufacturer representative, and Owner's representative, to examine the roof area for high and low spots. It may be necessary to mist the roof with water to identify the problem areas. The contractor will correct all problem areas identified. This examination should take place no less than 24 hours in advance of installing the finished membrane.**
- C. Before installation of the thermoplastic membrane contractor must sweep or blow away any dust, dirt or debris off the modified bitumen base sheet.
- D. Relax the thermoplastic membrane cap sheet prior to application. This will allow the membrane to sit down into the adhesive.
- E. Apply specified spatter spray foam adhesive to the specified modified base sheet in accordance with manufacturers recommendations. Coverage rate is approximately twenty-four (24) squares per set. The skin time for the adhesive is typically 5 – 8 minutes (70°F/50% RH).
- F. Position the thermoplastic membrane where it is ready to be installed and then roll the membrane into the specified foam adhesive. **Ensure that foam adhesive is not applied to any side laps or areas where the membrane is to be welded.**

- G. Broom in the thermoplastic flashing membrane immediately after install to ensure even continuous contact between the fleece backing and the foam adhesive immediately followed by a weighted roller to ensure contact with the adhesive and push out any air pockets.
- H. When installing, start at the low point of the roof with an appropriate roll width to offset side laps from the underlying modified base sheet a minimum of eighteen (18) inches. Work with manageable lengths for proper handling. Position the thermoplastic membrane with the salvage edge at low side of the roof. Install in shingle fashion, with no laps against the flow of water. **Once the membrane has had a chance to bond, utilize a seam probe to check all of the laps and joints for full adhesion. Any areas not properly bonded require welding, or, if necessary, the application of a utility patch to seal any un-bonded areas that exist.**
- I. All field seams must be clean and dry prior to initiating any field welding. Remove foreign materials from the seams (dirt, oils, etc.) with acetone or authorized alternative. Use CLEAN WHITE COTTON cloths and allow approximately five minutes for solvents to dissipate before initiating the automatic welder. Do not use denim or synthetic rags for cleaning. Contaminated areas within a membrane seam will inhibit proper welding and will require a membrane patch or strip.
- J. All welding shall be performed only by qualified personnel to ensure the quality and continuity of the weld. The lap or seam area of the membrane may be intermittently tack welded to hold the membrane in place. Heat weld all seams with a Leister Variant or approved heat welding machine. All seams exceeding 10 feet in length shall be welded with an approved automatic welder. The back interior edge of the membrane shall be welded first, with a thin, continuous weld to concentrate heat along the exterior edge of the lap during the final welding pass. Hand weld T joints, inside corner pieces and outside corner pieces along with hard to reach areas. Membrane without selvedge edge are to be butted together and sealed with a heat welded utility roll. Refer to Leister equipment manual for proper heat welding instructions.
- K. Hand weld T joints, inside corner pieces and outside corner pieces along with hard to reach areas. Membrane without selvedge edge are to be butted together and sealed with a heat welded utility roll. Refer to Leister equipment manual for proper heat welding instructions. Refer to local code requirements for electric supply, grounding and surge protection. The use of a dedicated, portable generator is highly recommended to ensure a consistent electrical supply, without fluctuations that can interfere with weld consistency. Properly welded seams shall utilize a 1.5 inch wide nozzle, to create a homogeneous weld, a minimum of 1.5 inches in width.
- L. Aesthetics will be a punch list item. The roof must match the owner's standards for appearance.
- M. Install thermoplastic flashing ply to all perimeter and projection details in the specified flashing adhesive. Install the adhesive per specification and heat weld seams in the same manner.

3.10 THERMOPLASTIC FLASHING MEMBRANE INSTALLATION:

- A. Remove all dust, dirt or debris from the base flashing ply.
- B. Position thermoplastic membrane flashing ply where it is ready to be installed. Use preferred method to align sheet with install path.
- C. Apply specified flashing adhesive to the exposed side of the already installed base flashing ply and to the backside of the KEE Non Fleeceback Flashing membrane at a total combined rate of 1.0-1.5 gallons per 100 sq. ft. Leave bottom 3" of membrane free of adhesive to allow for proper heat welding to the field ply. **NOTE:** *Once adhesive is applied to both surfaces, allow a minimum 30 minutes (depending on environmental conditions) for the adhesive to become tacky. Using the finger-push method, check that the adhesive develops strings, signifying that it has reached ideal tackiness.*
- D. Install KEE Non-Fleeceback Flashing ply extending min. 9" onto the field of the roof and at the desired width depending on the size of the crew handling the membrane. Typical lengths are 10'-18' for easy handling. **NOTE:** *Once the adhesive is tacky enough, set the KEE-Stone NF 60 Flashing in place on the wall. Immediately roll the surface using a 2 in. wide weighted roller to ensure proper mating of the two surfaces.*
- E. Broom in the thermoplastic flashing membrane immediately after install to ensure even continuous contact between the fleece backing and the foam adhesive.
- F. On all vertical seams, overlap the membrane a minimum of 3" and heat weld.
- G. Complete all inside and outside corner flashing details by fully heat welding the thermoplastic utility roll centered on the seam and/or using the specific specified accessory rolls. **Once the membrane has had a chance to bond, utilize a seam probe to check all of the laps and joints for full adhesion.**
- H. Once the specified flashing adhesive has set up and all vertical seams have been sealed, heat weld unadhered edge of the cap flashing ply to the KEE field membrane.
- I. All vertical flashings shall be terminated a minimum of eight (8) inches above the top layer of insulation in the field with an approved termination bar followed by counter-flashing system

3.11 FLASHING MEMBRANE INSTALLATION

- A. **Apply one (1) coat of the specified intumescent primer to the properly prepared wood substrates at an application rate of ½ gallon per 100 sf. Allow to dry and cure before applying the self-adhering fire retardant membrane.**
- B. **Install one (1) layer of the specified self-adhering fire-retardant membrane to the properly prepared and primed wood blocking and substrates to protect the wood from the torch application. Install the ply in a shingle type manner.**

- C. Seal all curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
- D. Prepare all walls, drain lead flashing, penetrations and where shown on the drawings to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.
- E. Coordinate counter flashings, cap flashings and similar work with modified bitumen roofing work as specified in other sections.
- F. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work as specified in other sections.
- G. Flash all penetrations as specified below and per the project documents. If specific detail is not shown in drawings or specified below, flash detail in accordance with the manufacturer's specifications to comply with the specified guaranty.
- H. On HVAC equipment, equipment supports, exhaust fans, etc. install 0.040" aluminum slip flashing to act as counterflashing. Install per roofing system manufacturer's recommendation and instructions.
- I. Install all metal counterflashings in accordance with project specifications and roofing systems manufacturer's recommendations and instructions.
- J. Aesthetics will be a punch list item. The roof must match the owner's standards for appearance. The desired result of the laps should be a small uniform pencil line bead of compound visible at all the laps.
- K. Roof Drain:
 - 1. Plug drain to prevent debris from entering plumbing.
 - 2. Run complete roof system plies over drain. Cut out plies inside drain bowl.
 - 3. Set 4lb. lead flashing (thirty (30) inch square minimum) in ¼ inch bed of mastic. Run lead into drain a minimum of two (2) inches. Prime lead at a rate of one hundred (100) square feet per gallon and allow to dry.
 - 4. Install base flashing ply (forty (40) inch square minimum) per specification.
 - 5. Install thermoplastic membrane (forty-eight (48) inch square minimum) in the specified flashing adhesive. Stop both flashings plies short of the clamping ring and seal edge of modified flashing plies with a heat welded finish.
 - 6. Install clamping ring over lead flashing.
 - 7. Remove drain plug and install strainer.
- L. Exhaust Fan/Passive Vent/Air Intake:
 - 1. Minimum curb height is eight (8) inches off the finished roof surface. As required, raise existing curbs to the required height. Prime vertical curb surface at a rate of one hundred (100) square feet per gallon and allow to dry.
 - 2. Set cant in bitumen. Run base roofing ply over cant a minimum of two (2) inches.

3. Install base flashing ply in the specified adhesive covering curb with six (6) inches on to field base ply of the roof.
4. Install thermoplastic cap field ply run over the base flashing ply in foam adhesive.
5. Install the thermoplastic flashing ply in adhesive nine (9) inches on to the field of the roof
6. Install passive vent/air intake over the wood nailers and flashing to act as counter-flashing. Fasten per manufactures recommendations.

M. Plumbing/Soil Stack:

1. Minimum stack height is twelve (12) inches.
2. Run roof base ply over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
3. Prime flange of new lead sleeve. Install properly sized lead sleeve set in ¼ inch bed of roof cement.
4. Install base flashing ply in the specified adhesive.
5. Install thermoplastic membrane in the specified flashing adhesive.
6. Caulk the intersection of the membrane with elastomeric sealant.
7. Turn sleeve a minimum of one (1) inch down inside of stack.

N. Pitch Pocket:

1. Run all base plies up to the penetration.
2. Place the pitch pocket over the penetration and prime all flanges.
3. Strip in flange of pitch pocket with one (1) ply of base flashing ply in the specified adhesive. Extend six (6) inches onto the base ply of the field of roof.
4. Install thermoplastic membrane in the specified flashing adhesive and extend nine (9) inches onto field of the roof.
5. Fill pitch pocket half full with non-shrink grout. Let this cure and top off with specified two-part pourable sealer.
6. Caulk joint between roof system and pitch pocket with the specified elastomeric asphaltic sealant.

O. Heat Stack:

1. Minimum stack height is twelve (12) inches.
2. Run roof system over the base plies of the entire surface of the roof. Seal the base of the stack with elastomeric asphaltic sealant or roof cement.
3. Prime flange of new sleeve. Install properly sized sleeves set in ¼ inch bed of roof cement.
4. Install base flashing ply in the specified flashing adhesive.
5. Install thermoplastic membrane in the specified flashing adhesive.
6. Caulk the intersection of the membrane with roof cement.
7. Install new collar over cape. Weld collar or install stainless steel draw band.

P. Pre-manufactured Curb for Equipment Support:

1. **Secure curb to roof deck.** Minimum flashing height of curb shall be eight (8) inches above finished roof. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Run all base field plies to the top edge of cant strip and seal with asphalt mastic to a watertight condition.

3. Install base flashing ply in the specified adhesive covering pre-manufactured curb with six (6) inches on to field base ply of the roof.
4. Install thermoplastic membrane field ply over the base flashing ply in the specified foam adhesive.
5. Install the thermoplastic flashing ply in the specified flashing adhesive over the base flashing ply, nine (9) inches on to field of the roof.
6. Terminate the flashing system at the top of the curb and fasten with cap nails at eight (8) inches on center. Install a 0.040" aluminum slip flashing under the equipment support cover and fasten to the curb at eight (8) inches on center with neoprene gasketed screws. The slip flashing shall cover the top of the flashing system three (3) inches minimum.

Q. Skylight/Roof Hatch:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field base plies over cant a minimum of three (3) inches.
3. Install base flashing ply covering curb in the specified adhesive with six (6) inches on to field base ply of the roof.
4. Install thermoplastic membrane field ply over the base flashing ply in the specified foam adhesive.
5. Install the thermoplastic flashing ply in the specified flashing adhesive over the base flashing ply, nine (9) inches on to field of the roof.
6. Install pre-manufactured lens and fasten flashing sides at eight (8) inches o.c. with fasteners and neoprene washers.
7. Install 0.040" aluminum counterflashing and fasten at eight (8) inches o.c. with fasteners and neoprene washers.

R. Curb Detail/Air Handling Station:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field base plies to the top edge of cant strip and seal with asphalt mastic to a watertight condition.
3. Install base flashing ply in the specified adhesive covering curb with six (6) inches on to field of the roof.
4. Install thermoplastic membrane field ply over the base flashing ply in the specified foam adhesive.
5. Install the thermoplastic flashing ply in the specified flashing adhesive over the base flashing ply, nine (9) inches on to field of the roof.
6. Install a 0.040" aluminum slip flashing under the existing counterflashing and over the roof flashing system, and fasten to the curb at eight (8) inches on center with neoprene gasketed screws. The slip flashing shall cover the top of the flashing system three (3) inches minimum.

S. Surface Mounted Counter-Flashing:

1. The new surface mounted counter shall be installed to provide a minimum of eight (8) inches of flashing height from the top of roof to the termination bar securing the roof flashing system.
2. Maximum flashing height is twenty-four (24) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.

3. Set cant in bitumen. Run all field base plies to the top edge of cant strip and seal with asphalt mastic to a watertight condition.
 4. Install base flashing ply in the specified adhesive covering wall with six (6) inches on to field of the roof.
 5. Install thermoplastic membrane field ply over the base flashing ply in the specified foam adhesive.
 6. Install the thermoplastic flashing ply in the specified flashing adhesive over the base flashing ply, nine (9) inches on to field of the roof.
 7. Install the specified termination bar even with the top of the flashing, and secure the termination bar through flashing and into wall every six (6) inches on center. Seal top of termination bar and flashing system with specified elastomeric asphaltic sealant or a three-course application of specified mastic and mesh.
 8. Install the new surface mounted counterflashing on the wall and secure with neoprene gasketed screws at 8" on center. End joints shall be interlocking and overlapping not less than 3". Corners shall be mitered and welded to a watertight condition. The bottom of the cap flashing insert shall project 1/4" from the face of the wall with a down turned drip edge (provide a down turned hem in areas subject to human contact). The new counterflashing shall extend down over the roof flashing system a minimum of four (4) inches below the termination bar.
- T. Pre-Manufactured Metal Edge Flashless Fascia System:
1. Inspect the nailer to assure proper attachment and configuration prior to installing the roof system. Install new wood nailers as required and/or specified to achieve the proper height of one (1) blocking higher than the thickness of the insulation system and recovery board. **Wood nailers shall be set for one (1) blocking higher than the highest thickness of insulation and roof recovery board, and shall be maintained constant around the perimeter of the roof.**
 2. Install tapered edge/cant strip in adhesive to create a smooth transition from roof system to wood blocking.
 3. Run base roofing ply over the edge. **Assure coverage of all wood nailers.** Fasten plies with ring shank nails at eight (8) inches o.c.
 4. Run thermoplastic roofing ply to the outside edge of the roof.
 5. **Install new metal fascia/extender system(s) with continuous cleats. Fasten to wood fascia as specified.**
 6. Install two (2) 1/4" wide beads of GreenLock Sealant XL on the bottom surface of the anchor bar flange. Install the new extruded anchor bar onto the modified membrane roof ply and over the edge of the roof, and face fasten the anchor bar to the wood blocking/structure through pre-punched slots every 12" o.c. staggered. The anchor bars shall be butted up next to each other leaving a minimum gap. Install the splice plate at each anchor bar joint.
 7. Install compression seals every 40" o.c. in the slots located at the top of the extruded anchor bar.
 8. Install fascia cover over the extruded anchor bar and press downward firmly until "snap" occurs and the cover is engaged along the entire length.
 9. Install a splice plate at each end of the extruded anchor bar.

3.12 FIELD QUALITY CONTROL

- A. Perform field inspection and testing as required by this specification.
- B. Correct defects or irregularities discovered during field inspection.
- C. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system

3.13 CLEANING

- A. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.
- B. In areas where finished surfaces are soiled by bitumen or any other sources of soiling caused by work of this section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.
- C. Repair or replace defaced or disfigured finishes caused by work of this section.

3.14 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. The roofing system manufacturer and/or Owner reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the Roofing Contractor at a negotiated price.
- D. If core cuts verify the presence of damp or wet materials, the Roofing Contractor shall be required to replace the damaged areas at his own expense.
- E. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- F. Notify the Owner and roofing system manufacturer upon completion of corrections.
- G. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

END OF SECTION 07 52 00

SECTION 08 71 00 DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.
 - 1. Door hardware for steel (hollow metal) doors.
 - 2. Door hardware for aluminum doors.
 - 3. Door hardware for wood doors.
 - 4. Door hardware for other doors indicated.
 - 5. Keyed cylinders as indicated.
- B. Related Sections:
 - 1. Division 6: Rough Carpentry.
 - 2. Division 8: Aluminum Doors and Frames
 - 3. Division 8: Hollow Metal Doors and Frames.
 - 4. Division 8: Wood Doors.
 - 5. Division 26 Electrical
 - 6. Division 28: Electronic Security
- C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.
 - 1. Builders Hardware Manufacturing Association (BHMA)
 - 2. NFPA 101 Life Safety Code
 - 3. NFPA 80 -Fire Doors and Windows
 - 4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
 - 5. UL10C – Positive Pressure Fire Test of Door Assemblies
 - 6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
 - 7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
- D. Intent of Hardware Groups
 - 1. Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

1.2 SUBSTITUTIONS:

- A. Comply with Division 1.
- B. Approval of products is at the discretion of the architect and their consultant

1.3 SUBMITTALS:

- A. Comply with Division 1.

- B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.
- C. Product Data: Manufacturer's specifications and technical data including the following:
1. Detailed specification of construction and fabrication.
 2. Manufacturer's installation instructions.
 3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
 4. Submit 6 copies of catalog cuts with hardware schedule.
 5. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2
- D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.
1. List groups and suffixes in proper sequence.
 2. Completely describe door and list architectural door number.
 3. Manufacturer, product name, and catalog number.
 4. Function, type, and style.
 5. Size and finish of each item.
 6. Mounting heights.
 7. Explanation of abbreviations and symbols used within schedule.
 8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.
- E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.
1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.
- F. Samples: (If requested by the Architect)
1. 1 sample of Lever and Rose/Escutcheon design, (pair).
 2. 3 samples of metal finishes
- G. Contract Closeout Submittals: Comply with Division 1 including specific requirements indicated.
1. Operating and maintenance manuals: Submit 3 sets containing the following.
 - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representatives for each manufacturer.
 - d. Parts list for each product.

2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. As installed "Wiring Diagrams" and "Point to Point" for each piece of hardware connected to power, both low voltage and 110 volts.
5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

A. Comply with Division 1.

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 years experience in the distribution of commercial hardware.
 - a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
 - b. Hardware Schedule shall be prepared and signed by an AHC.
4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
 - a. Provide UL listed hardware for labeled and 20-minute openings in conformance with requirements for class of opening scheduled.
 - b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.
6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with Division 1.

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.6 PROJECT CONDITIONS:

- A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

- A. Refer to Conditions of the Contract
- B. Manufacturer's Warranty:
 - 1. Closers: Ten years
 - 2. Exit Devices: Three Years
 - 3. Locksets & Cylinders: Three years
 - 4. All other Hardware: Two years.

1.8 OWNER'S INSTRUCTION:

- A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

- A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals Section.
 - 1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
 - 2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
 - 3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.
- B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. The following manufacturers listed are basis of design and are listed in the Hardware Schedule. Approval of products and models are at the discretion of the architect and their consultant.

Item:
Hinges

Manufacturer:
Best

Bommer, Hager, McKinney

Continuous Hinges	Best	Select, ABH
Locksets	Best	None
Cylinders & Cores	Best	None
Exit Devices	Precision	Von Duprin, Detex
Closers	Dorma 8600	LCN 4040, Norton 7500
Push/Pull Plates	Trimco	Burns, Rockwood
Push/Pull Bars	Trimco	Burns, Rockwood
Protection Plates	Trimco	Burns, Rockwood
Overhead Stops	Dorma	ABH, Glynn Johnson, Rixson
Door Stops	Trimco	Trimco, Rockwood
Flush Bolts	Trimco	ABH, Rockwood
Coordinator & Brackets	Trimco	ABH, Rockwood
Threshold & Gasketing	National Guard	Reese, Pemko

2.2 MATERIALS:

A. Hinges: Shall be Five Knuckle Ball Bearing hinges

1. Template screw hole locations
2. Bearings are to be fully hardened.
3. Bearing shell is to be consistent shape with barrel.
4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
5. Equip with easily seated, non-rising pins.
6. Non Removable Pin screws shall be slotted stainless steel screws.
7. Hinges shall be full polished, front, back and barrel.
8. Hinge pin is to be fully plated.
9. Bearing assembly is to be installed after plating.
10. Sufficient size to allow 180-degree swing of door
11. Furnish five knuckles with flush ball bearings
12. Provide hinge type as listed in schedule.
13. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
14. Furnish heavy weight hinges with 5" height for doors 3'-6" and over
15. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
16. UL10C listed for Fire rated doors.
17. Basis of Design:
 - a. Best FBB and 168 series. Substitutions as approved by architect.
 - b. Best CEFBB series electrified hinges. Substitutions as approved by architect.

B. Geared Continuous Hinges:

1. Tested and approved by BHMA for ANSI A156.26-1996 Grade 1
2. Anti-spinning through fastener
3. UL10C listed for 3 hour Fire rating
4. Non-handed
5. Lifetime warranty
6. Provide Fire Pins for 3-hour fire ratings
7. Enough size to permit door to swing 180 degrees

8. Basis of Design:
 - a. Stanley 661HD and 662HD series. Substitutions as approved by architect.

C. Mortise Type Locks and Latches:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
2. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Fit ANSI A115.1 door preparation
5. Functions and design as indicated in the hardware groups
6. 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
7. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
8. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
9. Auxiliary deadlatch to be made of one-piece stainless steel, permanently lubricated
10. Provide enough curved strike lip to protect door trim.
11. Properly size lock strikes for pairs of doors, short lip.
12. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
13. Lock shall have self-aligning, thru-bolted trim
14. Levers to operate a roller bearing spindle hub mechanism
15. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
16. Spindle to be designed to prevent forced entry from attacking of lever
17. Provide locksets with 7-pin removable and interchangeable core cylinders
18. Each lever to have independent spring mechanism controlling it
19. Core face must be the same finish as the lockset.
20. Basis of Design:
 - a. Best 45H with 16H trim. Substitutions as approved by architect.
 - b. Best 45HW with 16H trim. Substitutions as approved by architect.

D. Mortise Deadbolt:

1. Tested and approved by ANSI A156.5, Operational Grade 1.
2. Provide 9001-Quality Management and 14001-Environmental Management.
3. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty
4. 2-3/4 inch (70mm) backset
5. 1 inch throw stainless steel deadbolt.
6. Provide locksets with 7-pin I/C core.
7. Basis of Design:
 - a. Best 48H series. To match existing.

E. Exit Devices shall:

1. Tested and approved by BHMA for ANSI 156.3, Grade 1
2. Provide 9001-Quality Management and 14001-Environmental Management.
3. Provide a deadlocking latchbolt

4. Non-fire rated exit devices shall have cylinder dogging.
5. Exposed components shall be of architectural metals and finishes.
6. Lever design shall match lockset lever design
7. Provide strikes as required by application.
8. Fire exit devices to be listed for UL10C
9. UL listed for Accident Hazard
10. Shall consist of a cross bar or push pad, the actuating portion of which extends across, shall not be less than one half the width of the door leaf.
11. Provide vandal resistant or breakaway trim
12. Aluminum vertical rod assemblies are acceptable only when provide with the manufacturers optional top and bottom stainless steel rod guard protectors
13. Basis of Design:
 - a. Precision 2000 series. Substitutions as approved by architect.
 - b. Precision MLR (Motorized Latch Retraction) series. Substitutions as approved by architect.

F. Cylinders:

1. Provide the necessary interchangeable core cylinder housings, collars, rings & springs as recommended by the manufacturer for proper installation.
2. Provide the proper cylinder cams or tail piece as required to operate all locksets and other keyed hardware items listed in the hardware sets.
3. Coordinate and provide as required for related sections.
4. Best small format interchangeable core system.

G. Door Closers:

1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Closer shall have extra-duty arms and knuckles
5. Conform to ANSI 117.1
6. Maximum 2-7/16 inch case projection with non-ferrous cover
7. Separate adjusting valves for closing and latching speed, and backcheck
8. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
9. Full rack and pinion type closer with 1½" minimum bore.
10. Mount closers on non-public side of door, unless otherwise noted in specification
11. Closers shall be non-handed, non-sized and multi-sized.
12. Basis of Design:
 - a. Dorma 8900 series with full cover. Substitutions as approved by architect.

H. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.

1. Wall stop and floor stop shall be wrought bronze, brass or stainless steel.
2. Provide fastener suitable for wall construction.
3. Coordinate reinforcement of walls where wall stop is specified.
4. Provide dome stops where wall stops are not practical. Provide spacers or carpet riser for floor conditions encountered

- I. Over Head Stops: Provide a surface mounted concealed overhead when a floor or wall stop cannot be used or when listed in the hardware set.
 - 1. Concealed overhead stops shall be heavy duty bronze or stainless steel.
 - 2. Surface overhead stops shall be heavy duty bronze or stainless steel.
- J. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.
- K. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plates with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.
- L. Push Pull Bars: Provide ANSI J504, .1" Dia. Pull and push bar model and series as listed in hardware set. Provide proper fasteners for door construction.
- M. Kickplates: Provide with four beveled edges ANSI J102, .050 thickness, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- N. Mop plates: Provide with four beveled edges ANSI J103, .050 thickness 4 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
 - 1. Provide cutouts for hardware as listed in the hardware sets.
 - 2. Provide Warnock Hersey labeled plates for 3 hour metal fire doors where allowed by local authority.
- O. Door Bolts: Flush bolts for wood or metal doors.
 - 1. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 25 for hollow metal label doors.
 - 2. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 27 at wood label doors.
 - 3. Manual flush bolts, Certified ANSI/BHMA 156.16 at openings where allowed local authority.
 - 4. Provide Dust Proof Strike, Certified ANSI/BHMA 156.16 at doors with flush bolts without thresholds.
- P. Coordinator and Brackets: Provide a surface mounted coordinator when automatic bolts are used in the hardware set.
 - 1. Coordinator, Certified ANSI/BHMA A1156.3 Type 21A for full width of the opening.
 - 2. Provide mounting brackets for soffit applied hardware.
 - 3. Provide hardware preparation (cutouts) for latches as necessary.
- Q. Power Supply: Provide power supply for (ELR) Electric Latch Retraction exit devices and Motorized Latch Retraction (MLR) as recommended by manufacturer.
 - 1. Motherboard will accept up to four plug-in Control Modules. Provide the appropriate necessary control module to operate the number of ELR or MLR exit devices used at each opening. The Control Module shall include a Time delay Feature, variable (0-4 minutes) latch retraction period in response to a momentary input.

2. UL Listed for class II output.
 3. Include circuit breakers for protection of motherboard
 4. Control module shall include Fire alarm terminal and Auxiliary contacts for remote signaling.
 5. Optional card for Battery Backup power tap module to operate a Card reader or when ELR or MLR devices require battery backup (Lead Acid Batteries are not included and is to be furnished by others)
 6. Provide power supplies by the same manufacturer as the exit device.
- R. Power Transfer: Power transfer device shall be a steel housing and flexible tube. Secure and inconspicuous channel is to bring power from the frame to the door.
1. Basis of Design:
 - a. ABH PT1000 series.
 2. Tube shall accept up to 5/16" wire bundle and accommodate a door swing of 120 Deg.
 3. Wires as required by others
- S. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.
- T. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.
1. Weatherstrip shall be resilient seal of Neoprene.
 2. UL10C Positive Pressure rated seal set when required.
- U. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
1. Door seal shall be resilient seal of Neoprene.
 2. UL10C Positive Pressure rated seal set when required.
- V. Thresholds: Thresholds shall be aluminum beveled type with maximum height of ½" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions. Thresholds to have an anti-slip surface (SIA).
- W. Provide one wall mounted Telkee, Lund or MMF series key cabinet complete with hooks, index and tags to accommodate 50% expansion. Coordinate mounting location with architect.
- X. Key Control Software: Provide one, Keystone® 600N key management control software. Shall include general features
1. Password restricted logins.
 2. List all keys and items currently due back (or due back by any day designated)
 3. Lists all cores and their location, building and doors, and cross-references people to cores, doors, and building they access.
 4. Comprehensive list of reports available as an on-screen menu.
 5. Built-in easy to use backup program.
 6. Program always displays date of last backup.
 7. Dynamic searching capabilities for all records.
 8. On-screen indicator shows when historical info. Is present for a record.

9. On-screen indicator appears when notes are present on a record.
10. Able to operate in an NTFS network environment with TCPIP protocol
11. Multiple users can access program at the same time.
12. Software shall include a "Best" Automated Pin Segment Calculator and a Manual Pin Segment Calculator for authorized "Best" building lock shop facilities.
13. Software program is to be compatible with Windows NT, 2000 or XP with TCPIP protocol.

- Y. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occurs.

2.3 FINISH:

- A. Designations used in Schedule of Finish Hardware - 3.5, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products
- B. Powder coat door closers to match other hardware, unless otherwise noted.
- C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYS AND KEYING:

- A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.
- B. Cylinders, removable and interchangeable core system: Best Cormax 7-pin system. Furnish temporary cores for construction period with permanent cores furnished and installed at the completion of construction.
- C. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."
- D. Transmit Grand Masterkeys, Masterkeys and other Security keys to Owner by Registered Mail, return receipt requested.
- E. Furnish keys in the following quantities:
 1. 1 each Grand Masterkeys
 2. 4 each Masterkeys
 3. 2 each Change keys each keyed core
 4. 15 each Construction masterkeys
 5. 1 each Control keys

- F. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.
- G. Keying Schedule: Arrange for a keying meeting, with Architect Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements. Furnish 3 typed copies of keying schedule to Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

- A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
 - 1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
 - 2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
 - 3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Conform to local governing agency security ordinance.
- C. Install Conforming to ICC/ANSI A117.1 Accessible and Useable Building and Facilities.
 - 1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
- D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

- A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
1. Check and adjust closers to ensure proper operation.
 2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
 - a. Verify levers are free from binding.
 - b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
 3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 SCHEDULE OF FINISH HARDWARE:

Hardware Group: 01 Exterior (ALD x ALF)				
Exterior Aluminum Framed Entrances				
pair to have:				
Qty	Product	Model	Fin	Man
2ea	Continuous Hinges	661HD	689	BES
1ea	Key Removeable Mullion	SL-60	AL	SPL
1ea	Mullion Cylinder	Mortise Type	626	BES
1ea	Core	I/C	626	BES
1ea	Mullion Storage	MK-60	AL	SPL
1ea	Panic Device	3RO2103CD	626W	PRE
1ea	Trim Cylinder	Rim Type	626	BES
2ea	Dogging Cylinder	Mortise Type	626	PRE
3ea	Cores	I/C	626	BES
1ea	Panic Device	3RO2101CD	626W	PRE
2ea	Door Pulls	1191M5J	630	TRM
2ea	Door Closers /w Stop	8916FC SDS BSHD/DP89	689	DOR
1ea	Threshold	896N SIA ssms/ea	689	NGP
1ea	Mullion Seal	5100N	BLK	NGP
2ea	Door Sweeps	201NA	689	NGP
1ea	Rain Drip	16A	689	NGP
Note: Weather Seals by Aluminum Door Manufacturer				

Hardware Group: 02 Exterior (HMD x HMF)
Double Exterior Hollow Metal Framed Entrances

pair to have:				
Qty	Product	Model	Fin	Man
2ea	Continuous Hinges	662HD	689	BES
1ea	Key Removeable Mullion	KR822 x MC822	PTD	PRE
1ea	Mullion Cylinder	Rim Type	626	BES
1ea	Core	I/C	626	BES
1ea	Mullion Storage Kit	KMC822SK	PTD	PRE
1ea	Panic Device	3RO2103CD	626W	PRE
1ea	Trim Cylinder	Rim Type	626	BES
1ea	Core	I/C	626	BES
1ea	Panic Device	3RO2101CD	626W	PRE
2ea	Dogging Cylinders	Mortise Type	626	BES
3ea	Cores	I/C	626	BES
2ea	Door Pulls	1191M5J	630	TRM
2ea	Door Closers /w Stop	8916FC SDS	689	DOR
2ea	Kick Plates	K0050 10" x 2" LDW .050 B4E	630	TRM
1ea	Threshold	896N SIA ssms/ea	689	NGP
1ea	Mullion Seal	5100N	BLK	NGP
2ea	Door Sweeps	201NA	689	NGP
1set	Weather Seals	5050 Perimeter	BLK	NGP
1ea	Rain Drip	16A	689	NGP

Hardware Group: 02A Exterior (HMD x HMF)				
Double Exterior Hollow Metal Framed Entrances				
pair to have:				
Qty	Product	Model	Fin	Man
1ea	Continuous Hinges	662HD	689	BES
1ea	Key Removeable Mullion	KR822 x MC822	PTD	PRE
1ea	Mullion Cylinder	Rim Type	626	BES
1ea	Core	I/C	626	BES
1ea	Mullion Storage Kit	KMC822SK	PTD	PRE
1ea	Panic Device	3RO2103CD	626W	PRE
1ea	Trim Cylinder	Rim Type	626	BES
1ea	Core	I/C	626	BES
1ea	Panic Device	3RO2101CD	626W	PRE
1ea	Dogging Cylinders	Mortise Type	626	BES
3ea	Cores	I/C	626	BES
1ea	Door Pulls	1191M5J	630	TRM
1ea	Door Closers /w Stop	8916FC SDS	689	DOR
1ea	Kick Plates	K0050 10" x 2" LDW .050 B4E	630	TRM
1ea	Threshold	896N SIA ssms/ea	689	NGP
1ea	Mullion Seal	5100N	BLK	NGP
1ea	Door Sweeps	201NA	689	NGP
1set	Weather Seals	5050 Perimeter	BLK	NGP
1ea	Rain Drip	16A	689	NGP

Hardware Group: 03				
each to have:				
Qty	Product	Model	Fin	Man
3ea	Hinges	FBF168 4½" x 4½"	652	BES
1ea	Panic Device	3ROF2114 x 4914B	630	PRE
1ea	Door Pulls	1191M5J	630	TRM
1ea	Door Closer w/ Stop	8916FC SDS	689	DOR
1ea	Kick Plate	K0050 10" x 2" LDW .050 B4E	630	TRM
1set	Gasketing	5050 Perimeter	BLK	NGP

Hardware Group: 04				
Group Learning Rooms				
each to have:				
Qty	Product	Model	Fin	Man
3ea	Hinges	FBF168 4½" x 4½"	652	BES
1ea	Classroom Lockset	45H7R16H	630	BES
1ea	Core	I/C	626	BES
1ea	Door Closer	8916FC AF86	689	DOR
1ea	Kick Plate	K0050 10" x 2" LDW .050 B4E	630	TRM
1ea	Wall Stop	1270CXSV	630	TRM
1set	Gasketing	5050	BLK	NGP

Hardware Group: 05				
Custodial & Storages Rooms				
Qty	Product	Model	Fin	Man
3ea	Hinges	FBF168 4½" x 4½"	652	BES
1ea	Storeroom Lockset	45H7D16H	630	BES
1ea	Core	I/C	626	BES
1ea	Door Closer	8916FC AF86	689	DOR
1ea	Kick Plate	K0050 10" x 2" LDW .050 B4E	630	TRM
1ea	Wall Stop	1270CXSV	630	TRM
1set	Gasketing	5050 (Door# B102)	BLK	NGP
3ea	Silencers	1229A	GRY	TRM

Hardware Group: 08				
Office & Administration Rooms				
each to have:				
Qty	Product	Model	Fin	Man
3ea	Hinges	FBF179 4½" x 4½"	652	BES
1ea	Office Lockset	45H7A16H	630	BES
1ea	Kick Plate	K0050 4" x 2" LDW .050 B4E	630	TRM
1ea	Wall Stop	1270CXSV	630	TRM
1set	Gasketing	2525	BLK	NGP

Hardware Group: 13				
Multi-User Restrooms				
each to have:				

BETZE LEARNING COMMONS
DELAWARE TECHNICAL & COMMUNITY COLLEGE

BSA+A PROJECT No. 25.006
DTCC No. C9004020002
JUNE 2026

Qty	Product	Model	Fin	Man
3ea.	Hinges	CB168 4 ½" x 4 ½"	630	BES
1ea.	Deadlock	48H7R	626	BES
1ea.	Core	I/C	626	BES
1set.	Door Push/Pull Set	1035-1 4x16	710CU	TRM
1ea.	Door Closer	8916FC IS	689	DRM
1ea.	Kick Plate	K0050 8" x 2" LDW	630	TRM
1ea.	Mop Plate	KM050 4" x 2" LDW	630	TRM
Set	Gasketing	5020C	GRY	NGP

SECTION 09 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings.
- B. Related Sections include the following:
 - 1. Division 09 Section "Acoustical Tile Ceilings" for ceilings consisting of mineral-base acoustical tiles used with concealed suspension systems, stapling, or adhesive bonding.
- C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete at ceilings.

1.3 DEFINITIONS

- A. AC: Articulation Class.
- B. CAC: Ceiling Attenuation Class.
- C. LR: Light Reflectance coefficient.
- D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 - 1. Ceiling suspension system members.
 - 2. Method of attaching hangers to building structure.
 - a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.

3. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
 4. Minimum Drawing Scale: 1/8 inch = 1 foot (1:96).
- C. Samples for Initial Selection: For components with factory-applied color finishes.
- D. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
1. Acoustical Panel: Set of 6-inch- (150-mm-) square Samples of each type, color, pattern, and texture.
 2. Exposed Suspension System Members, Moldings, and Trim: Set of 12-inch- (300-mm-) long Samples of each type, finish, and color.
- E. Qualification Data: For testing agency.
- F. Field quality-control test reports.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical panel ceiling.
- H. Research/Evaluation Reports: For each acoustical panel ceiling and components and anchor and fastener type.
- I. Maintenance Data: For finishes to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory, or an NVLAP-accredited laboratory, with the experience and capability to conduct the testing indicated. NVLAP-accredited laboratories must document accreditation, based on a "Certificate of Accreditation" and a "Scope of Accreditation" listing the test methods specified.
- B. Source Limitations:
1. Acoustical Ceiling Panel: Obtain each type through one source from a single manufacturer.
 2. Suspension System: Obtain each type through one source from a single manufacturer.
- C. Source Limitations: Obtain each type of acoustical ceiling panel and supporting suspension system through one source from a single manufacturer.
- D. Seismic Standard: Provide acoustical panel ceilings designed and installed to withstand the effects of earthquake motions according to the following:
1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
 2. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
 - 1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

1.8 COORDINATION

- A. Coordinate layout and installation of acoustical panels and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size panels equal to 2.0 percent of quantity installed.
 - 2. Suspension System Components: Quantity of each exposed component equal to 1.0 percent of quantity installed.
 - 3. Hold-Down Clips: Equal to 2.0 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL PANELS, GENERAL

- A. Recycled Content: Provide acoustical panels with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes a minimum of 1.0% by weight.

- B. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.
 - 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface per ASTM E 795.
- C. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
 - 1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.2 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING – ACT. 1

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Interiors Inc., Radar High-NRC #22121 Acoustic Panels or a comparable product by one of the following:
 - 1. BPB USA.
 - 2. Chicago Metallic Corporation.
 - 3. Ecophon CertainTeed, Inc.
 - 4. Tectum Inc.
 - 5. Armstrong World Industries
- B. Color: White.
- C. LR: Not less than 0.84.
- D. NRC: Not less than 0.70.
- E. CAC: Not less than 35.
- F. Edge/Joint Detail: Beveled Tegular, unless noted otherwise.
- G. Thickness: 3/4 inch
- H. Modular Size: 24 by 24 inches

2.3 ACOUSTICAL PANELS FOR ACOUSTICAL PANEL CEILING – ACT. 2

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Interiors Inc., Radar High-NRC High-CAC #22523 Acoustical Panels or a comparable product by one of the following:
 - 1. BPB USA.
 - 2. Chicago Metallic Corporation.
 - 3. Ecophon CertainTeed, Inc.

- 4. Tectum Inc.
- 5. Armstrong World Industries

- B. Color: Black.

- C. LR: Not less than 0.84.

- D. NRC: Not less than 0.70.

- E. CAC: Not less than 35.

- F. Edge/Joint Detail: Beveled Tegal

- G. Thickness: 3/4 inch

- H. Modular Size: 24 by 24 inches

- I. Provide Knife Edge trim at "Ceiling Cloud" Areas.

2.4 SUPMETAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

- B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.
 - 1. High-Humidity Finish: Comply with ASTM C 635 requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 - 1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing per ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: Postinstalled expansion anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
 - c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchor.

- d. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy.
 2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated, and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing per ASTM E 1190, conducted by a qualified testing and inspecting agency.
 - D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
 1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304, nonmagnetic.
 3. Nickel-Copper-Alloy Wire: ASTM B 164, nickel-copper-alloy UNS No. N04400.
 4. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.135-inch- (3.5-mm-) diameter wire.
 - E. Hanger Rods: steel, zinc coated or protected with rust-inhibitive paint.
 - F. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch- (1-mm-) thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.
 - G. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches (610 mm) o.c. on all cross tees.
 - H. Impact Clips: Where indicated, provide manufacturer's standard impact-clip system designed to absorb impact forces against acoustical panels.
- 2.5 METAL SUSPENSION SYSTEM FOR ACOUSTICAL PANEL CEILING
 - A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Interiors – Donn DX 15/16 “Exposed” Tee System or a comparable product by one of the following:
 1. BPB USA.
 2. Chicago Metallic Corporation.
 3. Ecophon CertainTeed, Inc.
 4. Armstrong World Industries.
- 2.6 METAL EDGE MOLDINGS AND TRIM
 - A. Products: Subject to compliance with requirements, provide one of the following:
 1. Armstrong World Industries, Inc.;
 2. BPB USA; <

3. Chicago Metallic Corporation;
4. Fry Reglet Corporation;
5. USG Interiors, Inc.;

B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips, complying with seismic design requirements and the following:

1. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

D. Extruded- Aluminum Knife Edge Molding & Trim: Provide manufacturers standard seamless knife edge, formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners. Finish as selected by architect from manufacturers full range of finishes.

2.7 ACOUSTICAL SEALANT

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

B. Products: Subject to compliance with requirements, provide one of the following:

1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
 - c. Approved equal.

C. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant[, with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in

building construction as demonstrated by testing representative assemblies according to ASTM E 90.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Splay hangers only where required.
 - 4. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 5. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 - 6. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved.

- Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
7. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 8. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 9. Do not attach hangers to steel deck tabs.
 10. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 11. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.
 12. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.6 m). Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension system runners and moldings.
 3. For reveal-edged panels on suspension system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
 4. For reveal-edged panels on suspension system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension system surfaces and panel faces flush with bottom face of runners.

5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
6. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions, unless otherwise indicated.
7. Install clean-room gasket system in areas indicated, sealing each panel and fixture as recommended by panel manufacturer's written instructions.
8. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections and prepare reports:
 1. Suspended ceiling system.
 2. Hangers, anchors and fasteners.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- C. Tests and Inspections: Testing and inspecting of completed installations of acoustical panel ceiling hangers and anchors and fasteners shall take place in successive stages, in areas of extent and using methods as follows. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.
 1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.
 - a. Within each test area, testing agency will select 1 of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf (890 N) of tension; it will also select one of every 2 postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf (1957 N) of tension.
 - b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.
- D. Remove and replace acoustical panel ceiling hangers and anchors and fasteners that do not pass tests and inspections and retest as specified above.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension system members. Comply with manufacturer's written instructions for cleaning and

touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 10 22 26 – OPERABLE PARTITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Manually operated, paired panel operable partitions.
- B. Related Sections Include:
 - 1. Division 03 Sections for concrete tolerances required.
 - 2. Division 05 Sections for primary structural support, including pre-punching of support members by structural steel supplier per operable partition supplier's template.
 - 3. Division 06 Sections for wood framing and supports, and all blocking at head and jambs as required.
 - 4. Division 09 Sections for wall and ceiling framing at head and jambs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for folding doors.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and installation details.
 - 2. Include clearances required for operation, **operating and control mechanisms, access requirements, storage pockets and pocket doors**, and accessory items.
- C. Samples: For each exposed product and for each color and texture specified.
- D. Samples for Initial Selection: For each type of exposed finish.
 - 1. Include Samples of hardware and accessories involving color and finish selection.
- E. Samples for Verification: For each type of exposed finish.
 - 1. Include Samples of hardware and accessories to verify color and finish selection.
- F. Product Schedule: For folding doors refer to door schedule.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each fire-rated operable partition, tests performed by a qualified testing agency.
- C. Evaluation Reports: For fire-rated operable partitions, from ICC-ES.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For folding doors to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified in writing by the operable partition manufacturer, as qualified to install the manufacturer's partition systems for work similar in material design, and extent to that indicated for this Project.
- B. Acoustical Performance: Test operable partitions in an independent acoustical laboratory in accordance with ASTM E90 test procedure and classified in accordance with ASTM E413 to attain no less than the STC rating specified. Provide a complete and unedited written test report on request.
- C. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.

- D. The operable wall must be manufactured by a certified ISO-9001-2015 company or an equivalent quality control system.
- E. Indoor Air Quality: Operable partition manufacturer's non-wood products must meet the SCS Indoor Advantage™ Gold Certification or equivalent. This approval guarantees conformance to indoor air concentrations meeting Indoor Advantage Gold Indoor Air Quality Certified to SCS-105 v4..2-2023 Conforms to ANSI/BIFMA M7.1 and X7.1 and the CDPH/EHLB Standard Method (CA 01350) v1.2-2017 conducted in an independent third-party air quality testing laboratory.

1.7 REFERENCE STANDARDS

A. ASTM International

- 1. ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.
- 2. ASTM E90 – Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
- 3. ASTM E84 – Surface Burning Characteristics of Building Materials
- 4. ASTM E413 – Classification for Rating Sound Insulation

B. Health Product Declaration Collaborative

- 1. Health Product Declaration Open Standard v2.1

C. International Standards Organization

- 1. ISO 14021- Environmental Labels and Declarations – Self-Declared Environmental Claims (Type II Environmental Labeling).
- 2. ISO 14025: 2011-10, Environmental Labels and Declarations – Type III Environmental Declarations – Principles and Procedures.
- 3. ISO 14040: 2009-11 Environmental Management – Life Cycle Assessment - Principles and Framework.
- 4. ISO 14044: 2006-10, Environmental Management – Life Cycle Assessment – Requirements and Guidelines.
- 5. ISO 21930 – Sustainability in Buildings and Civil Engineering Works – Core Rules for Environmental Product Declarations of Construction Projects and Services.

D. Other Standards

- 1. ADA – American Disabilities Act.
- 2. ANSI Z97.1 – Safety Glazing Materials Used in Buildings.
- 3. CPSC 16 CFR 1201 – Safety Standard for Architectural Glazing Materials.
- 4. NEMA LD3 – High Pressure Decorative Laminates

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install operable partitions until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for building occupants after completion of construction during the remainder of the construction period.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Clearly mark packages and panels with numbering systems used on Shop Drawings. Do not use permanent markings on panels.
- B. Protect panel materials during delivery, storage, and handling to comply with manufacturer's direction and as required to prevent damage.

1.10 WARRANTY

- A. Provide written warranty by manufacturer of operable partitions agreeing to repair or replace any components with manufacturing defects.
- B. Warranty period: Eight (8) years

PART 2 - PRODUCTS

2.1 OPERABLE PARTITIONS

- A. Description: Top-supported, horizontal-sliding, manually operated panel folding partitions, with panels joined by continuous hinge connectors for the full height of panels.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Moderfold; **Acousti-Seal® Legacy® - Paired Panel (932) manually operated paired panel operable partition** or comparable product by one of the following:

- a. FolDoor.
- b. Panelfold Inc.
- c. Moderco.

2.2 OPERATION

- A. Series of paired flat panels hinged together in pairs, manually operated, top supported with operable floor seals.

B. INITIAL SEAL:

1. Bulb seal.

C. FINAL CLOSURE:

1. Horizontally expanding panel edge with removable crank.

2.2 PANEL CONSTRUCTION

- A. Nominal 3" [76mm] thick panels in manufacturer's standard 48" (1220mm) widths. All panel horizontal and vertical framing members fabricated from minimum 16-gage formed steel with overlapped and welded corners for rigidity. Top channel is reinforced to support suspension system components. Frame is designed so that full vertical edges of panels are of formed steel and provide concealed protection of the edges of the panel skin.

B. PANEL SKIN CONSTRUCTION

1. Roll-formed 21-gage steel wrapping around panel edge. Panel skins shall be lock formed and welded directly to the frame for unitized construction.

C. ACOUSTICAL RATING :

1. 52 STC.

D. HINGES:

1. Full leaf butt hinges, attached directly to panel frame with welded hinge anchor plates within panel to further support hinge mounting to frame. Lifetime warranty on hinges. Hinges mounted into panel edge or vertical astragal are not acceptable.
2. Concealed laminated hinge with antifriction segments mounted between each heat-treated link. Hinge to be attached directly to panel frame. Welded internal hinge bracket shall support the hinge and allow for adjustment of hinge plates. Lifetime warranty on hinges. Concealed hinges mounted into panel edge or vertical astragal are not acceptable.

E. PANEL TRIM:

1. No vertical trim required or allowed on edges of panels; minimal groove appearance at panel joints.

F. PANEL WEIGHT:

1. 52 STC – 11 lbs./square foot

2.4 PANEL FINISHES

A. Panel face finish shall be:

1. Factory applied Class A reinforced vinyl wallcovering with woven backing, weighing not less than 21 oz/lin.yard [595 g/lin.m]. Color selected from manufacturer's standard color selector.

B. Panel Trim:

1. Exposed panel trim of one consistent color from manufacturer's standard offering.

2.5 SOUND SEALS

A. VERTICAL SEALS:

1. Vertical Interlocking Sound Seals between panels: Roll-formed steel astragals, with reversible tongue and groove configuration in each panel edge for universal panel operation. Rigid plastic or aluminum astragals in only one panel edge are not acceptable.

B. HORIZONTAL TOP SEALS:

1. Continuous contact extruded vinyl bulb shape with pairs of non-contacting vinyl fingers to prevent distortion without the need for mechanically operated parts.

C. HORIZONTAL BOTTOM SEALS:

1. Automatic operable seals providing nominal 2" (51mm) operating clearance with an operating range of +1/2" (13mm) to -1 1/2" (38mm) which automatically drop as panels are positioned, without the need for tools or cranks.

2.6 SUSPENSION SYSTEM

A. #17 Suspension System

1. Suspension Tracks: Minimum 11-gage, 0.12" (3.04mm) roll-formed steel track, supported by adjustable steel hanger brackets, supporting the load-bearing surface of the track, connected to structural support by pairs of 3/8" (9.5mm) diameter threaded rods. Aluminum track is not acceptable.

a. Exposed track soffit: Steel, integral to track, and pre-painted off-white.

2. Carriers: One all-steel trolley with steel-tired ball bearing wheels per panel. Non-steel tires are not acceptable.

3. Warranty period: Ten (10) years

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with ASTM E557, operable partition manufacturer's written installation instructions, drawings, and approved Shop Drawings.
- B. Install operable partitions and accessories after other finish operations, including painting have been completed.
- C. Match operable partitions by installing panels from marked packages in numbered sequence indicated on Shop Drawings.
- D. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.

3.2 CLEANING AND PROTECTION

- A. Clean partition surfaces upon completing installation of operable partitions to remove dust, dirt, adhesives, and other foreign materials according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions in a manner acceptable to the manufacturer and installer that ensure operable partitions are without damage or deterioration at the time of Substantial Completion.

3.3 ADJUSTING

- A. Adjust operable partitions to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruptions, or malfunction, throughout the entire operation range. Lubricate hardware and other moving parts.

3.4 EXAMINATION

- A. Examine flooring, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable partitions. Proceed with installation only after unsatisfactory conditions have been corrected.

3.5 DEMONSTRATION

- A. Demonstrate proper operation and maintenance procedures to Owner's representative.
- B. Provide Operation and Maintenance Manual to Owner's representative.

END OF SECTION 10 22 26

SECTION 104413 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fire-protection cabinets for the following:
 - a. Portable fire extinguisher.
 - b. Portable fire extinguisher and fire-hose valve.
 - c. Portable fire extinguisher, fire hose, rack, and fire-hose valve.
 - d. Fire-hose valve.
 - e. Fire hose, rack, and fire-hose valve.

B. Related Requirements:

1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets.
2. Section 211000 "Water-Based Fire-Suppression Systems" for fire-hose connections.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.
2. Show location of knockouts for hose valves.

B. Shop Drawings: For fire-protection cabinets.

1. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

D. Samples for Initial Selection: For each type of exposed finish required.

E. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.4 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.3 FIRE-PROTECTION CABINET

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Guardian Fire Equipment, Inc
 - 2. JL Industries; Activar Construction Products Group, Inc.
 - 3. Larsen's Manufacturing Company
 - 4. Modern Metal Products
- B. Fire-Protection Cabinet Type: Suitable for fire extinguisher.
- C. Cabinet Construction: One-hour fire rated.
 - 1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch- thick cold-rolled steel sheet lined with minimum 5/8-inch- thick fire-barrier material. Provide factory-drilled mounting holes.
- D. Cabinet Material: Aluminum sheet.
 - 1. Shelf: Same metal and finish as cabinet.
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).

1. Square-Edge Trim: 1-1/4- to 1-1/2-inch backbend depth.
 2. Rolled-Edge Trim: 2-1/2-inch backbend depth.
- F. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.
- G. Cabinet Trim Material: Same material and finish as door.
- H. Door Material: Aluminum sheet.
- I. Door Style: Vertical duo panel with frame.
- J. Door Glazing: Tempered float glass (clear).
- K. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
1. Provide manufacturer's standard.
 2. Provide manufacturer's standard hinge, permitting door to open 180 degrees.
- L. Accessories:
1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
 2. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
 3. Break-Glass Door Handle: Manufacturer's standard, integral to glass with the words "PULL TO BREAK GLASS" applied to handle.
 4. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
 5. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
 6. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
 - 1) Location: Applied to cabinet glazing.
 - 2) Application Process: Engraved.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.
 7. Alarm: Manufacturer's standard alarm that actuates when fire-protection cabinet door is opened and that is powered by batteries.
- M. Materials:
1. Aluminum: ASTM B221 for extruded shapes and aluminum sheet, with strength and

durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.

- a. Finish: Clear anodic.
 - b. Color: As selected by Architect from full range of industry colors and color densities.
2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).
 3. .

2.4 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 1. Weld joints and grind smooth.
 2. Miter corners and grind smooth.
 3. Provide factory-drilled mounting holes.
 4. Prepare doors and frames to receive locks.
 5. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 2. Fabricate door frames of one-piece construction with edges flanged.
 3. Miter and weld perimeter door frames and grind smooth.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine roughing-in for hose and cabinets to verify actual locations of piping connections before cabinet installation.
- B. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses for semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION OF FIRE-PROTECTION CABINETS

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.
 - 1. Fire-Protection Cabinet Mounting Height: 42 inches above finished floor to top of fire extinguisher.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
 - 2. Provide inside latch and lock for break-glass panels.
 - 3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
 - 4. Fire-Rated Cabinets:
 - a. Install cabinet with not more than 1/16-inch tolerance between pipe OD and knockout OD. Center pipe within knockout.
 - b. Seal through penetrations with firestopping sealant as specified in Section 078413 "Penetration Firestopping."
- C. Identification:
 - 1. Apply decals at locations indicated.

3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.

- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413

DIVISION 26 SECTION 26 27 26
WIRING DEVICES
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SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Receptacles, receptacles with integral GFCI, and associated device plates.
 - 2. Twist-locking receptacles.
 - 3. Snap switches.
 - 4. Pendant cord-connector devices.
 - 5. Cord and plug sets.
 - 6. Floor service outlets, poke-through assemblies, and multioutlet assemblies.
- B. Related sections include the following:
 - 1. Section 260923 – Lighting Control Devices.

1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Field quality-control test reports.
- D. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of wiring device and associated wall plate through one source from a single manufacturer. Insofar as they are available, obtain all wiring devices and associated wall plates from a single manufacturer and one source.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.

1.6 COORDINATION

- A. Receptacles for Owner-Furnished Equipment: Match plug configurations.
 - 1. Cord and Plug Sets: Match equipment requirements.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements manufacturers offering products that may be incorporated into the work include, but are not limited to, the following available manufacturers' names:
 - 1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
 - 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
 - 3. Leviton Mfg. Company Inc. (Leviton).
 - 4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, Tamper-Resistant 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498 Supplement sd, and FS W-C-596.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Hubbell; BR20*.
 - b. Leviton; 5362-SG*.
 - c. Pass & Seymour; TR5262*.

2.3 GFCI RECEPTACLES

- A. General Description:

1. Straight blade, non-feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.
3. Include indicator light that shows when the GFCI has malfunctioned and no longer provides proper GFCI protection.

B. GFCI Convenience Receptacles, Tamper-Resistant 125 V, 20 A:

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Hubbell; GFTR20.
 - b. Pass & Seymour; 2095TR.
2. Receptacle(s) shall also be weather-resistant type for exterior applications.

2.4 USB RECEPTACLES

- A. Description:** Single-piece, rivetless, nickel-plated, all-brass grounding system. Nickel-plated, brass mounting strap. Integral shutters that operate only when a plug is inserted in the line voltage receptacle.
1. Line Voltage Receptacles: Two pole, three wire, and self-grounding; NEMA WD 6, Configuration 5-20R.
 2. USB Receptacles: USB Type A/C, 5 V dc, and 2.1 A per receptacle (minimum).
 3. Standards: Comply with UL 498, UL 1310, USB 3.0 devices, and FS W-C-596.
 4. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" Article.

2.5 HAZARDOUS (CLASSIFIED) LOCATION RECEPTACLES

- A. Available Wiring Devices for Hazardous (Classified) Locations:** Comply with NEMA FB 11 and UL 1010.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper Crouse-Hinds.
 - b. EGS/Appleton Electric.
 - c. Killark; a division of Hubbell Inc.

2.6 TWIST-LOCKING RECEPTACLES

- A. Single Convenience Receptacles, 125 V, 20 A:** Comply with NEMA WD 1, NEMA WD 6 configuration L5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; L520R.
 - b. Hubbell; HBL2310.
 - c. Leviton; 2310.
 - d. Pass & Seymour; L520-R.

2.7 PENDANT CORD-CONNECTOR DEVICES

- A. Description: Matching, locking-type plug and receptacle body connector; NEMA WD 6 configurations L5-20P and L5-20R, heavy-duty grade, or as noted on the Drawings.
 1. Body: Nylon with screw-open cable-gripping jaws and provision for attaching external cable grip.
 2. External Cable Grip: Woven wire-mesh type made of high-strength galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.

2.8 DUAL FLIP-UP TABLE BOX

- A. Description: Dual Flip-up recessed hard wired unit with 6'-0" cord. Unit shall include (1) One Nema 5-20R receptacle and (1) One opening for communications
 1. Catalog No. DQF-F-20-BK-2A; black finish; dual flip-up unit which includes one (1) 20A black tamper-resistant duplex receptacle and one (1) opening that will accept an adapter for one (1) Wiremold CM Series Open System 2A module, one (1) Ortronics® Series II or one (1) TracJack adapter that accommodates a wide range of communication outlets. Adapters are included. Units are supplied with a 6 foot [1.83m] cord.

2.9 CORD AND PLUG SETS

- A. Description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.
 1. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.
 2. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.10 TOGGLE SWITCHES

- A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
 - b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
 - c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
 - d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

C. Pilot Light Switches, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 2221PL for 120 V and 277 V.
 - b. Hubbell; HPL1221PL for 120 V and 277 V.
 - c. Leviton; 1221-PLR for 120 V, 1221-7PLR for 277 V.
 - d. Pass & Seymour; PS20AC1-PLR for 120 V.
2. Description: Single pole, with neon-lighted handle, illuminated when switch is "ON."

D. Key-Operated Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Cooper; 2221L.
 - b. Hubbell; HBL1221L.
 - c. Leviton; 1221-2L.
 - d. Pass & Seymour; PS20AC1-L.
2. Description: Single pole, with factory-supplied key in lieu of switch handle.

E. Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Wattstopper; LVS-1.
 - b. Cooper; 1995.
 - c. Hubbell; HBL1557.
 - d. Leviton; 1257.
 - e. Pass & Seymour; 1251.

- F. Key-Operated, Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Wattstopper; LVS-1K-G.
 - b. Cooper; 1995L.
 - c. Hubbell; HBL1557L.
 - d. Leviton; 1257L.
 - e. Pass & Seymour; 1251L.

2.11 WALL PLATES

- A. Single and combination types to match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
 - 2. Material for Finished Spaces: 0.035-inch- (1-mm-) thick, satin-finished stainless steel or per Architect.
 - 3. Material for Unfinished Spaces: Galvanized steel.
 - 4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in "wet locations."
- B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

2.12 FLOOR SERVICE FITTINGS

- A. Type: Modular, flush-type, dual-service units suitable for wiring method used.
- B. Compartments: Barrier separates power from voice and data communication cabling.
- C. Service Plate: Rectangular, die-cast aluminum with satin finish.
- D. Power Receptacle: NEMA WD 6 configuration 5-20R, gray finish, unless otherwise indicated.
- E. Voice and Data Communication Outlet: Two modular, keyed, color-coded, RJ-45 Category 6a jacks for UTP cable.

2.13 MULTIOUTLET ASSEMBLIES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Hubbell Incorporated; Wiring Device-Kellems.

2. Wiremold Company (The).
-
- B. Components of Assemblies: Products from a single manufacturer designed for use as a complete, matching assembly of raceways and receptacles. Provide in lengths indicated on the Drawings, with wiring devices in quantities and spacing indicated. Provide suitable device plates and standard receptacle plates. Provide complete with all fittings and accessories required for a complete system.
 - C. Raceway material: Metal with manufacturer's standard finish. Provide power and telecommunications wiring to all devices indicated as multioutlet assemblies. Feed locations and wiring runs shall be configured such that 40 percent full capacities are not exceeded.
 - D. Raceways shall be provided with full length divider for separation of power and communications devices of and wiring.
 - E. Devices shall be type and color as previously specified. Label, circuit number on inside of plate of each power device.

2.14 FLOOR BOXES

- A. Available Products: Subject to compliance with requirements, products may be incorporated into the Work to include, but not be limited to, the following:
 1. Wiremold Company (The).
 2. Hubbell, Incorporated.
 3. Steel City.
- B. Provide floor boxes as detailed on the Drawings, complete with fittings, devices, covers, etc. Floor boxes shall be cast iron for slab-on-grade applications.
- C. Boxes shall be manufactured from cast-iron and shall be approved for use on-grade floors. The boxes shall be a minimum 14-1/2"L x 11-7/8"W x 3-7/16" H (368mm x 302mm x 87mm). There shall be four (4) independent wiring compartments that allow capacity for up to six duplex receptacles and/or communication services. The RFB4 and 6 Series Boxes shall permit tunneling from adjacent or opposite compartments. Four of the compartments shall have a minimum wiring capacity of 27 cubic inches (443 cubic cm) and two compartments shall have a minimum wiring capacity of 36 cubic inches (590 cubic cm). The boxes shall provide the following minimum number of conduit hubs: four 1" (25mm) and four 1-1/4" (32mm). The boxes shall be fully adjustable, providing a maximum of 1-7/8" (48mm) pre-pour adjustment, and a maximum of 3/4" (19.1mm) after-pour adjustment.
- D. Activation covers shall be manufactured of die-cast aluminum or die-cast zinc, and shall be available in a brushed aluminum finish, plated brass finish, or a powder-coated paint finish. Activation covers shall be available in flanged and flangeless versions. Covers shall be available with options for tile or carpet inserts, flush covers, or covers with one 1" trade size screw plug opening and one combination 1-1/4" and 2" trade size screw

plug openings for furniture feed applications. Flanged covers shall be 7-3/4" L x 6-9/16" W (197mm x 167mm). Flangeless covers shall be 6-3/4" L x 5-9/16" W (171mm x 142mm). The activation cover shall have been evaluated by UL to meet the applicable US and Canadian safety standards for scrub water exclusion when used on tile, terrazzo, wood and carpet.

- E. Box manufacturer shall provide a complete line of faceplates and bezels to facilitate mounting of UTP, STP (150 ohm), fiber optic, coaxial, and communication devices. The boxes shall provide a series of device mounting plates that will accommodate specified outlets and modular inserts.
- F. The minimum concrete pour depth shall be 3-7/16" (87mm) for the RFB4, RFB4-4DB, and the RFB4-CI-1 Series Boxes. The boxes shall contain four locations to accommodate leveling for pre-concrete pour adjustment and shall provide four leveling screws for the pre-pour adjustment. The floor boxes shall be warranted for one year from the date of final acceptance.
- G. Factory-fabricated and -wired assembly of below-floor junction box with multi-channelled, through-floor raceway/firestop unit and detachable matching floor service-outlet assembly. Comply with UL 514 scrub water exclusion requirements. Service-Outlet Assembly shall be flush type with devices indicated on drawings and complying with requirements in Section 27. Selected to fit nominal 4-inch (100-mm) cored holes in floor and matched to floor thickness. Unit is listed and labeled for fire rating of floor-ceiling assembly. Wiring Raceways and Compartments: For a minimum of four No. 12 AWG conductors and a minimum of cables that comply with requirements in Division 27.

2.15 POKE-THROUGH ASSEMBLIES

- A. Description: Factory-fabricated and -wired assembly of below-floor junction box with multichanneled, through-floor raceway/firestop unit and detachable matching floor service-outlet assembly.
- B. Basis of Design: Legrand. Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Hubbell.
- C. Standards: Comply with scrub water exclusion requirements in UL 514.
- D. Service-Outlet Assembly: Flush type with four simplex receptacles as detailed, and with compartment for communications connections if shown.
- E. Size: Selected to fit nominal 4/6-inch cored holes in floor and matched to floor thickness.
- F. Fire Rating: Unit is listed and labeled for fire rating of floor-ceiling assembly.
- G. Closure Plug: Arranged to close unused 4/6-inch cored openings and reestablish fire rating of floor.

- H. Wiring Raceways and Compartments: For a minimum of eight No. 12 AWG conductors.

2.16 SERVICE POLES

A. Dual-Channel Service Poles:

1. Description: Factory-assembled and -wired units to extend power and voice and data communication from distribution wiring concealed in ceiling to devices or outlets in pole near floor.
2. Poles: Nominal 2.5-inch- (65-mm-) square cross-section, with height adequate to extend from floor to at least 6 inches (150 mm) above ceiling, and with separate channels for power wiring and voice and data communication cabling.
3. Mounting: Ceiling trim flange with concealed bracing arranged for positive connection to ceiling supports; with pole foot and carpet pad attachment.
4. Material: Aluminum.
5. Finishes: Satin-anodized aluminum.
6. Wiring: Sized for minimum of five No. 12 AWG power and ground conductors and a minimum of four, balanced twisted pair data communication cables.
7. Power Receptacles: Two duplex, 20-A, straight-blade receptacles complying with requirements in this Section.
8. Data Communication Outlets: Blank insert with bushed cable opening.

2.17 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.
2. Wiring Devices Connected to Emergency Power System: Red.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to ensure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.

3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the right.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

- H. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 GFCI RECEPTACLES

- A. Install non-feed-through GFCI receptacles where protection of downstream receptacles is not required.

3.3 FLOOR BOXES

- A. Set metal floor boxes level and flush with finished floor surface.

3.4 IDENTIFICATION

- A. Comply with Division 16 Section "Identification for Electrical Systems."
- B. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
 - 1. Test Instruments: Use instruments that comply with UL 1436.
 - 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
 - 1. Line Voltage: Acceptable range is 105 to 132 V.
 - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
 - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
 - 6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.
- C. Wiring device will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION

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