ARCHITECT AND CONSULTANTS SEALS PAGE

ADDENDUM NO. 2

02-13-2026

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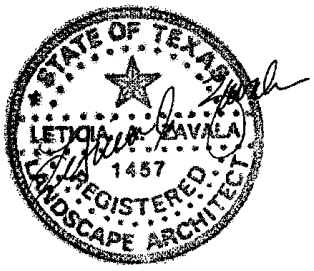


1-9-2026

CIVIL ENGINEER:
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Edgar Cecena
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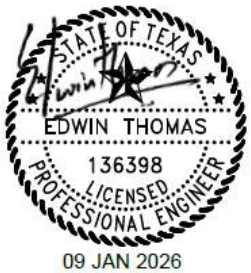


LANDSCAPE ARCHITECT:
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1-9-26

STRUCTURAL ENGINEER:
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MEP & FIRE SUPPRESSION ENGINEERS:
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1-9-2026

FOOD SERVICE CONSULTANT:
FOODSERVICE DESIGN PROFESSIONALS, LLC
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DISD – GLOBAL PREP ACADEMY UPPER CAMPUS
BID ISSUE – ADDENDUM NO. 2 – NARRATIVE
FEBRUARY 13, 2026



02-13-2026

NOTE: THE SPECIFICATIONS REFERRED TO BELOW AS REVISED AND REISSUED - THE CHANGES ARE INDICATED BY ~~STRIKE THROUGH~~ (ON DELETIONS) AND UNDERLINED (ON ADDED TEXT) ON THE REISSUED SPECIFICATIONS.

ITEM #2/A-1**: REVISED SPECIFICATIONS - DIVISION 00 (REVISED ADD. NO. 2, 2-13-2026) ISSUED HEREWITH:**

1. SECTION 000002 – TABLE OF CONTENTS – Revised to include all Addendum 1 & 2 changes.
2. SECTION 000003 – LIST OF DRAWINGS – Revised to include all Addendum 1 & 2 changes.

ARCHITECTURAL SPECIFICATIONS - NEW

ITEM #2/A-1: **NEW SPECIFICATIONS,** (Issued Add#2 – 02/13/2026), as follows:

1. SECTION 087100 – DOOR HARDWARE.
2. SECTION 087101 – DOOR HARDWARE INDEX.
3. SECTION 088300 – MIRRORS.
4. SECTION 095446 – FABRIC WRAPPED CEILING PANELS.
5. SECTION 102123 – CUBICLE CURTAINS AND TRACK.
6. SECTION 105613 – METAL STORAGE SHELVING.
7. SECTION 115313 – LABORATORY FUME HOODS.
8. SECTION 116143 – STAGE CURTAINS.
9. SECTION 123213 – MANUFACTURED WOOD VENEER FACED CASEWORK.

ARCHITECTURAL SPECIFICATIONS – (REVISED 02/13/2026) REISSUED HEREWITH:

ITEM #2/A-2: **REVISED/REISSUED SPECIFICATIONS,** (Issued Add#2 – 02/13/2026), as follows:

1. SECTION 076200 – SHEET METAL FLASHING AND TRIM.
2. SECTION 077200 – ROOF ACCESSORIES.
3. SECTION 088000 – GLAZING.
4. SECTION 093013 – CERAMIC TILING.
5. SECTION 095423 – LINEAR METAL CEILINGS
6. SECTION 096466 – WOOD ATHLETIC FLOORING
7. SECTION 097200 – WALL COVERINGS.
8. SECTION 098400 – SOUND ABSORBING UNITS.
9. SECTION 100100 – MISCELLAENOUS SPECIALTIES.
10. SECTION 104413 – FIRE PROTECTION CABINETS.
11. SECTION 114000 – FOOD SERVICE EQUIPMENT.
12. SECTION 142400 – MACHINE ROOMLESS HYDRAULIC PASSENGER ELEVATOR.

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ARCHITECTURAL DRAWINGS

ITEM #2/A-2: **NEW DRAWINGS,** (Issued Add#2 – 02/13/2026), as follows:

1. NEW SHEET A-108 RETAINING WALL ENLARGED SITE PLANS AND DETAILS
2. NEW SHEET A-609 SECTION DETAILS
3. NEW SHEET A-615 PLAN DETAILS
4. NEW SHEET A-901 SIGNAGE TYPES
5. NEW SHEET A-902 SIGNAGE SCHEDULE
6. NEW SHEET A-903 SIGNAGE FLOOR PLAN - LEVEL 1 - AREA A
7. NEW SHEET A-904 SIGNAGE FLOOR PLAN - LEVEL 1 - AREA B
8. NEW SHEET A-905 SIGNAGE FLOOR PLAN - LEVEL 1 - AREA C
9. NEW SHEET A-906 SIGNAGE FLOOR PLAN - LEVEL 2 - AREA A

ITEM #2/A-2: **REVISED/REISSUED DRAWINGS,** (Revised Add#2 – 02/13/2026), as follows:

1. SHEET A-101 SITE REFERENCE PLAN
2. SHEET A-103 SITE PLAN - AREA B
3. SHEET A-105 ENLARGED SITE PLANS
4. SHEET A-107 SITE DETAILS
5. SHEET A-200 UNDERFLOOR PLAN
6. SHEET A-204 FLOOR PLAN - LEVEL 1 - AREA A
7. SHEET A-205 FLOOR PLAN - LEVEL 1 - AREA B
8. SHEET A-206 FLOOR PLAN - LEVEL 1 - AREA C
9. SHEET A-210 ENLARGED PLANS & ELEVATIONS - RESTROOMS
10. SHEET A-211 ENLARGED PLANS & ELEVATIONS - RESTROOMS
11. SHEET A-214 FLOOR PATTERN PLAN - LEVEL 1 - AREA A
12. SHEET A-216 FLOOR PATTERN PLAN - LEVEL 1 - AREA C
13. SHEET A-303 RCP - LEVEL 1 - AREA A
14. SHEET A-507 BUILDING SECTIONS
15. SHEET A-801 INTERIOR ELEVATIONS
16. SHEET A-803 INTERIOR ELEVATIONS
17. SHEET A-809 MILLWORK SECTIONS, AND DETAILS
18. SHEET A-814 MILLWORK DETAILS - DINING / PLATFORM

FOODSERVICE EQUIPMENT DRAWINGS

ITEM #1: THE FOLLOWING DRAWINGS HAVE BEEN RE-ISSUED HEREWITH AS FOLLOWS:

1. SHEET QF1.4 FS PLUMBING PLAN (revised 02-13-2026), issued herewith.
    a. Revised plumbing schedule

2. SHEET QF1.5 FS ELECTRICAL PLAN (revised 02-13-2026), issued herewith.
    a. Revised electrical schedule.

DISD – GLOBAL PREP ACADEMY UPPER CAMPUS
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CIVIL DRAWINGS:

ITEM #2/C-1: THE FOLLOWING DRAWINGS HAVE BEEN REVISED/RE-ISSUED HEREWITH AS FOLLOWS:

3. Sheet C90.01 (revised 02/13/2026), issued herewith.
   b. Added trench drain locations at rear of building door locations per architect plan A-214. Included 6" PVC pipe and headwall with rip-rap outfall for trench drain storm sewer.
   c. Updated legend to reflect new storm sewer and door trench drain installation.

4. Sheet C10.01 (revised 02/13/2026), issued herewith.
   a. Revised location and size of domestic water tap 2" to 4".
   b. Revised 2" domestic water meter to 4" domestic water meter and vault.
   c. Added notes for 8" PVC 45 degree bends along Alternate water main replacement for clarification.

5. Sheet C10.02 (revised 02/13/2026), issued herewith.
   a. New sheet. PRIVATE UTILITY PLAN
   b. Revised size of domestic service line from 2" to 4".
   c. Revised 6" sanitary sewer service connection downstream of grease interceptor per latest MEP plumbing site plan.

ELECTRICAL DRAWINGS:

ITEM #2/E-1: THE FOLLOWING DRAWINGS HAVE BEEN REVISED/REISSUED HEREWITH AS FOLLOWS:

1. Sheet E401 (revised 02-13-2026), issued herewith.

2. Sheet E402 (revised 02-13-2026), issued herewith.

3. Sheet E411 (revised 02-13-2026), issued herewith.

4. Sheet E412 (revised 02-13-2026), issued herewith.

5. Sheet E421 (revised 02-13-2026), issued herewith.
   a. Revised view titles to exclude room number.

6. Sheet E422 (revised 02-13-2026), issued herewith.
   a. Revised view titles to exclude room number

ITEM #2/E-2: THE FOLLOWING DRAWINGS HAVE BEEN DELETED:

1. Sheet E412.

LANDSCAPE DRAWINGS:

ITEM #2/L-1: THE FOLLOWING DRAWINGS HAVE BEEN REVISED/RE-ISSUED HEREWITH AS FOLLOWS:

1. Sheet L-100 (revised 2-13-2026), issued herewith.
   a. Addition of information to valve schedule.
   b. Addition and/or revision of pipe sizing to all valves.
   c. Addition of irrigation design calculations.
   d. Addition of sleeves.

2. Sheet L-102 (revised 2-13-2026), issued herewith.
   a. Addition and/or revision of pipe sizing to all valves.
   b. Addition of sleeves.

3. Sheet L-103 (revised 2-13-2026), issued herewith.
   a. Addition and/or revision of pipe sizing to all valves.
   b. Addition of sleeves.

4. Sheet L-104 (revised 2-13-2026), issued herewith.
   a. Addition and/or revision of pipe sizing to all valves.
   b. Addition of sleeves.

STRUCTURAL DRAWINGS:

1. SHEET S-201 (revised 2-13-2026), issued herewith.

2. SHEET S-203 (revised 2-13-2026), issued herewith.

3. SHEET S-206 (revised 2-13-2026), issued herewith.

END OF NARRATIVE

DALLAS I.S.D.
GLOBAL PREP ACADEMY – UPPER CAMPUS

ADDENDUM #2 SPECIFICATIONS
February 13, 2026

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SECTION 087100 – DOOR HARDWARE

GENERAL

SUMMARY

Section Includes: Furnish and deliver all items of finish hardware required to adequately trim and hang all doors, as is hereinafter specified, and listed in the hardware sets. This further includes hardware for doors and frames of unusual profile or shape or other special conditions. The hardware shall be provided with all necessary standard and special fasteners, screws, bolts, expansion shields or anchors to properly secure hardware to its intended door, frame, or other surface.

Related Sections: Other Sections within this specification which relate to products supplied and installed under finish hardware are as follows, but not limited to:

1.	Hollow Metal Doors and Frames:	Section 08 11 13.
2.	Flush Wood Doors:	Section 08 14 16
3.	Aluminum-Framed Entrances and Storefronts	Section 08 41 13
4.	Electrical:	Division 23.

REFERENCES

The following documents should be used in estimating and detailing and considered as a standard of quality and performance:

5.	I.B.C.	International Building Code (current year adopted).
6.	NFPA-80	Fire Door Windows (current year adopted).
7.	NFPA-101	Life Safety Code (current year adopted).
8.	NFPA-105	Smoke Control Door Assembly (current year adopted).
9.	ANSI-117.1	Providing Accessibility and Usability for Physically Handicapped People (current year adopted).
10.	A.D.A.A.G.	Federal Register for Americans with
11.	ADA	Disabilities Act Accessibility Guidelines.
12.	T.A.S.	Texas Accessibility Standards.

SUBMITTALS

General Requirements: Make all submittals in accordance with Section 013300.

Schedules: Unless specifically stated, furnish six (6) copies of a completely detailed schedule of finish hardware (see DHI's Sequence and Format of the Hardware Schedule) for approval. Hardware schedule to be complete with Title Page, Door Index/Keying Schedule, and Manufacturer's legend. After "Approval" provide eight (8) copies, unless otherwise requested, of the corrected, revised, and approved schedule for field use, distribution, and files. Provide one (1) copy, complete with Catalog Cuts, marked "Installer's Copy" and deliver it to the job site.

Product Data: Provide a catalog cut, clearly marked, and identified, illustrating, and describing each product included in the Hardware Schedule. Formulate these catalog cuts into sets and include a set with each copy of the Hardware Schedule submitted.

Samples: If so, requested by the Architect, provide a sample of any product or item requested, properly marked, and tagged, for the opening for which it is intended. After examination and approval by the Architect, the sample shall be turned over to the General Contractor for incorporation into the project.

Templates: When resubmitting "Approved" copies of the Hardware Schedule, provide a complete "Template List" covering the items scheduled. Further and upon request, provide copies of

templates to manufacturers or trades, whose work includes preparation of their products, to receive hardware. Provide copies of all such transmittals to the contractor for his files.

Keying: Provide a keying schedule, listing the levels of keying, (GGMK, GKD, MKD or KA) as well as an explanation of the key system's function, the key symbols used, and the numbers of the doors controlled. This shall be provided in conjunction with the Door Index/Keying Schedule (which lists the door number schedule heading, lock type and individual key symbol and remarks or special instructions) mentioned in above. This project is to be Master keyed and/or Grand Master keyed and provide ten (10) grandmaster keys, fifteen (15) master keys and five (5) keys per lockset or cylinder. (SECURITY KEYING)

Operations and Maintenance Data: One-hundred-twenty (120) days prior to project completion, provide to DISD LOCKSMITH DEPARTMENT 972-925-5239, a copy of the latest, revised, and updated schedule of finish hardware, 100% half size prints, complete with catalog cuts and keying schedule. In addition, furnish one (1) copy of maintenance and parts manuals for those items for which they are readily available and normally provided.

QUALITY ASSURANCE

Substitutions: Request for substitutions shall not be accepted within this project. Architect, owner, and Hardware Consultant have selected one (1) specified and two (2) equals listed hereinafter in the Hardware Schedule. By this selection process they have established three (3) equal products for competitive pricing, while insuring no unnecessary delays by a substitution process. If any specified product is listed as a "No Substitution" product, this product will be supplied as specified, with no alteration or request of substitution. The reason for this is to comply with the uniformity established at this project. Parts and supplies are inventoried for these products for ease and standardization of replacement.

Supplier Qualification: Qualifications of supplier listed below shall meet or exceed those standards and be documented, in writing, upon the request of the Architect:

13. The hardware supplier shall be engaged regularly in the furnishing, delivery and servicing of contract builder's hardware and must be experienced and knowledgeable in all phases of estimating, detailing, scheduling, master keying, shipping, and installation practices.
14. An A.H.C. or equivalent shall be on staff at hardware supplier's place of business to assist Architect and General Contractor throughout project.

Installer Training: Before hardware installation, general contractor/construction manager shall coordinate a hardware installation seminar with a one-week notice to all parties involved. The seminar is to be conducted on the installation of hardware, specifically of locksets, closers, exit devices, continuous hinges, overhead stops, and access control hardware. Manufacturer's representative of the above products shall present seminar. Seminar shall be held at the job site and attended by installers of hardware (including low voltage hardware) for aluminum, hollow metal, and wood doors. Training to include use of installation manuals, hardware schedules, templates, and physical product samples.

DELIVERY, STORAGE AND HANDLING

Marking and Packaging: All items of hardware shall be delivered to the jobsite in the manufacturer's original cartons or boxes. Each item of hardware shall be marked with the abbreviation set forth on the shop drawings to ensure that the product reaches its installation destination without needing specific hardware product number knowledge.

Delivery: The hardware supplier shall coordinate with the General Contractor to compile a mutually beneficial delivery schedule, which imposes no hardship on either party. If items of hardware are to be delivered to manufacturers or fabricators for installation on their portion of work, the General Contractor must be advised of such shipments, along with copies of shipping

ticketsand other documentation, thus transferring responsibility to the manufacturer/fabricator, for care of said hardware.

Storage: No hardware is to be delivered to the jobsite until the contractor has provided a dry, secure area with adequate shelving to store the hardware. If requested by the contractor, the hardware supplier shall send a representative to the jobsite to assist in the checking-in and lay out of the hardware at the storage location. This must be done only when a representative of the contractor is present.

Warranty: All warranties shall be that of the manufacturer as stated in the most recent product literature. Any evidence of misuse or abuse voids all warranties expressed or implied.

MAINTENANCE

Maintenance Service: If there are any products listed hereinafter that normally require a maintenance or service contract, provide the Owner/Architect with details and costs of said contract.

PRODUCTS

MANUFACTURERS

Products listed in the following with an asterisk (*) shall denote specified manufacturers in Hardware Schedule. The remaining two (2) listed manufacturers will be acceptable equals. If only one manufacturer is listed this will be handled as a “No Substitution” specification, as set forth in 1.04 Quality Assurance.

MATERIALS

Screws and Fasteners: Provide all screws and fasteners of the proper size and type to properly anchor or attach the item of hardware scheduled. Provide all fasteners with Phillips’s head, unless security type screws (spanner-head or torx-head) are hereinafter specified.

Hinges: Where hinges are specified, they shall be as follows:

15. On doors to exterior openings and main corridor doors, and other doors of high frequency use, provide a continuous, gear type hinge of appropriate weight as specified.
16. Where regular ball bearing hinges are listed for other doors, provide one hinge for each 30-inch of door height.
17. The width of the hinges shall be sufficient to clear all trim that is mounted to the door frame.
18. Provide hinges with height and weight to match frame prep where existing hollow metal frames are re-used.
    a. ACCEPTABLE MANUFACTURERS----Ives*, Stanley, McKinney, Hager.

Continuous Hinges: Continuous hinges shall consist of three (3)-interlocking extrusions in a pin-less assembly applied to the full height of the door. All continuous geared hinges shall be manufactured to template screw locations and be non-handed. All mortise hinges and half mortise hinges shall cover and wrap the door edge completely. Doorframe heads shall be extended for clearance on full or half mortise hinges versus downsizing doors for ease of repair and replacement. All frames shall be properly reinforced per manufacturer's standards. Standard warranty shall be for the life of opening.

19. ACCEPTABLE MANUFACTURERS----Ives*, Hager, Pemko, Select, Zero.

Locks: All locks shall incorporate a seven-pin tumbler system core that will be keyed to the existing GRANDMASTER SYSTEM. Provide locks and cylinders complete with keyed construction cores. All locks shall be operational Grade 1 mortise as is hereinafter listed in the Hardware

Schedule. Provide L9050 function at Teacher's Lounge and Administration areas. Provide L9071 function at all classroom doors with locksets.

20. ACCEPTABLE MANUFACTURERS---Schlage* (no substitution)

Lock Trim: Mortise locks are to be furnished with lever handle trim (17A), with levers having a return to within 1/2 inch of the door face, as is hereinafter listed in the Hardware Schedule. Provide "N" escutcheons on all new locks for renovation projects.

Cylinder Housings: Rim and mortise cylinder housings shall be Schlage. Cams and tailpieces must be coordinated with locking mechanism. Provide blocking rings as required to adapt cylinder housing to the locking mechanism.

21. ACCEPTABLE MANUFACTURERS--- Schlage, no substitution.

Construction Cores: Furnish keyed brass construction cores installed in every cylinder and cylinder housing included in the project. Provide one construction key for each core. All temporary construction cores shall have a minimum of two levels such that a pass key can be issued to individual users limiting access to a single space with a second level "master" of all construction cores that can be issued to school principal and DISD Lock Department. Contractor shall provide master keys per the following schedule:

22. Masterkeys: 4 each
23. Construction Masterkeys: 6 each
24. Construction Keys: 15 each
25. Construction Control Keys: 2 each
26. Control Keys if New System: 2 each
27. ACCEPTABLE MANUFACTURERS---Schlage EV29R * (no substitutions)

Permanent Cores/Keys: Furnish permanent Schlage cores. Keying system must be guaranteed of no duplication of existing change keys, master keys or grandmaster keys located in this project. **Provide new permanent cores for all new cylinder housings and locks as well as any existing locks that have been modified**.

28. ACCEPTABLE MANUFACTURERS--- Schlage EV29R * (no substitutions)
29. This project is to be Master keyed and/or Grand Master keyed and provide ten (10) grandmaster keys, fifteen (15) master keys and five (5) keys per lockset or cylinder.
30. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
31. Deliver keys with identifying tags to Owner by security shipment direct from manufacturer.
32. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp
33. **Include installation of permanent cores and return construction cores to hardware supplier**. Construction cores and keys to remain property of hardware supplier.

Surface Bolts: Surface bolts to have 8 (eight) inch bolt for ease of access to bolt lever. Surface bolts shall be U.L. listed for use on the inactive leaf of a pair of labeled doors. Surface bolts shall be packed with both top and bottom strike and ms and sms.

34. ACCEPTABLE MANUFACTURERS----Ives*, Rockwood, Trimco.

Flush Bolts: Manual flush bolts to have 12-inch rods for doors 7'6". Doors over 7'6" high shall have bolts with top rods of 18 inch or 24 inch to allow ease of access to bolt lever. Furnish dust proof strikes for all bottom bolts.

35. ACCEPTABLE MANUFACTURERS---Ives*, Rockwood, Trimco.

Automatic Flush Bolts: Bolts are to be adjustable for unusual clearance or conditions and have a thermal lock that automatically locks the inactive door under high heat conditions due to fire. Furnish dust proof strikes for all bottom bolts.

36. ACCEPTABLE MANUFACTURERS---Ives*, Rockwood, Trimco.

Door Coordinators: Coordinators to be non-handed and designed to become an integral part of the door frame and engineered to prevent damage in case of abnormal force against the door that is held open.

37. ACCEPTABLE MANUFACTURERS---Ives*, Rockwood, Trimco.

Exit Devices and Mullions: Exit Devices shall be rim, mortise or vertical rod type as called for in the Hardware Schedule. All such devices shall be U.L. listed. Interior devices, (except vestibule doors), shall be furnished with lever handle trim, 996-L2, matching lock design unless specified as exit only function. Exterior doors and vestibule doors shall be furnished with VR trim unless specified as exit only function. XP devices shall be furnished at all exterior locations. Provide 330 series push bars at vestibule doors that do not require exit devices. Provide key removable mullions with stabilizers. All devices shall have published three-year warranty. Provide 9949 series devices at interior pairs.

38. ACCEPTABLE MANUFACTURERS---Von Duprin* (no substitution)

Door Closers: Door closers shall be of cast iron material and be of rectangular designs and furnished with a full cover and thru bolts. Provide heavy duty arms on exterior doors. They shall be furnished with backcheck, delayed action, hold-open and advanced backcheck as listed in the Hardware Schedule. Closers shall be mounted out of the line of sight wherever possible (i.e., room side of corridor doors, etc.) with parallel arm mounting on out swinging doors. Mount closers top jamb or on brackets and/or drop plates, where special conditions call for it.

39. ACCEPTABLE MANUFACTURERS----LCN* (no substitution).

Push Plates: Push plates are to be .050 brass, bronze, or stainless steel with four (4) beveled edges, drilled, and countersunk for screws, as is hereinafter specified in the Hardware Schedule.

40. ACCEPTABLE MANUFACTURERS----Ives*, Rockwood, Trimco.

Door Pulls: Door pulls to be ADA compliant with a 2 1/2-inch projection from back of pull to face of door. All door pulls to be thru bolted or back-to-back mounting. All pulls to be supplied with mounting bolts for high abuse areas with a minimum of 3/8 inch - 16 heavy-duty bolts.

41. ACCEPTABLE MANUFACTURERS----Ives*, Rockwood, Trimco.

Protective Plates: Protective plates shall be mop (6”), kick (10”) or armor (34”) and shall be 16 gauge stainless steel, with three (3) beveled edges, drilled and countersunk for screws. Plates to be mounted to avoid louvers and/or glass kits.

42. ACCEPTABLE MANUFACTURERS----Ives*, Rockwood, Trimco.

Door Stops and Holders: Where a door strikes a wall at approximately 90 degrees, a suitable doorstop shall be provided, either a wall bumper or floor stop. Do not provide floor stops unless they are specifically listed in the hardware sets. If door does not strike a wall, an overhead stop shall be required. Provide Ives FS18L heavy duty floor stops only at exterior doors. Provide proper blocking for wall bumpers at stud walls and in frame and door for overhead stops.

43. ACCEPTABLE MANUFACTURERS----Ives*, Glynn Johnson*, Rixson, Rockwood, Trimco.

Thresholds and Weatherstrip: Weatherstripping to have aluminum housing and specified insert and have elongated holes for adjustment. Door sweeps to be surface mounted of aluminum housing with specified insert. Overhead drip caps to be of aluminum, have a 2 1/2-inch projection and be 4 inches wider than the door opening. Thresholds shall be of saddle type with no more than 1/2 inch in rise with stainless steel fasteners.

44. ACCEPTABLE MANUFACTURERS----NGP*, Pemko, Reese, Zero.

FINISHES

Hardware finishes shall match and be maintained to BHMA symbols, as is specified hereinafter in the Hardware Schedule. A strict adherence to base metals and finish will be mandate.

KEY CONTROL

Provide key cabinet(s) as manufactured of sufficient capacity to handle all keys, plus 50 percent expansion Provide key control cross-reference chart and accountability (sign-out) tags. General Contractor shall install the key cabinet with cabinet set up by Best Access Systems
45. ACCEPTABLE MANUFACTURERS: Telkee, Lund, Key Control.

EXECUTION

EXAMINATION

Examination of project requirements on site prior to submitting bids will be mandate of all bidders of finish hardware. At this time, suggestions and/or problems will be addressed and answered by the Architect and/or Hardware Consultant. If any decision affects bidding documents, Addenda will be issued of said decision with complete explanation.

INSTALLATION

Installation shall occur with a qualified installer with a minimum five (5) years' experience in the installation of commercial grade hardware. Manufacturer's instructions shall dictate templating and installation.

46. Best Access Systems is to coordinate with DISD on keying system design, provide permanent cores, and key cabinet set up.
47. All costs associated with Best's work shall be the responsibility of the General Contractor.
48. Installation of the permanent cores and keys shall be coordinated with the Owner. All work shall be provided by Best Access Systems or a subcontractor trained and approved by Best Access Systems. Installation of permanent cores shall be completed prior to Final Completion and paid for by the General Contractor.
49. Best Access Systems to deliver keys directly to the Owner with no 3rd party or General Contractor involvement. Contact Lock Supervisor, Steve Fickel at (972) 925-5239. Once the permanent cores are installed, the District assumes primary responsibility for the security of the building and its contents.
50. Best Access Systems to return construction cores to the General Contractor.
51. General Contractor to deliver to owner at end of project, any special installation tools, hex dogging keys, etc.
52. Renovations to existing facilities where existing doors are to be reused with new locking hardware may require the use of a metal wrap at the lock location to cover any exposed holes from previous lock prep. Existing door jambs shall be prepped to accept flush mounted ANSI strikes. Prep to factory specs.
53. Where existing doors are to be reused with new locking hardware, the district will determine if any deviation from the DISD standard of a mortise lock would be acceptable.
54. Install all door closers with thru-bolts and adjust after HVAC is in operation.
55. Install exit devices with sex, nuts, and bolts through all doors.
56. Set thresholds in full bed of exterior grade caulk near interior and exterior edges.

FIELD QUALITY CONTROL

A final inspection shall take place by the hardware installer and hardware supplier to insure correct installation and operation, and check for any damaged or defective items. Observe and inspect that all hardware has been installed to its correct destination in proper working order.

ADJUSTING AND CLEANING

At completion of the installation and before turnover of the project, make final adjustments to door closures and other items of hardware. Leave all hardware clean and fully operable. Should any item be found to be defective, it shall be repaired or replaced as directed.

PROTECTION

Provide protection for all items of hardware during construction to prevent damage or marring of such items. Damaged or disfigured hardware shall be replaced or corrected by the responsible party.

HARDWARE SETS

OPT0404215

V2 1/31/2025 vs. V3 1/29/2026

Hardware Group No.**001L**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	**SFIC MORTISE CYLINDER**	**80-132 W/KEYED CONST. CORE**	**626**	**SCH**
1	**SFIC EVEREST CORE**	**80-037 EV29 R**	**626**	**SCH**
	NOTE	**REMAINDER OF HARDWARE BY DOOR MFR**		

Hardware Group No. 103

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	OFFICE/ENTRY LOCK	L9050HD 17N L583-363	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. 201

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	STOREROOM LOCK	L9080HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.**201C**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	**HINGE**	**5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)**	**652**	**IVE**
1	**STOREROOM LOCK**	**L9080HD 17N**	**626**	**SCH**
1	**SFIC EVEREST CORE**	**80-037 EV29 R**	**626**	**SCH**
1	**SURFACE CLOSER**	**4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ**	**689**	**LCN**
1	**KICK PLATE**	**8400 10" X 2" LDW B-CS**	**630**	**IVE**
1	**GASKETING**	**488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)**	**BK**	**ZER**

Hardware Group No.201S

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	STOREROOM LOCK	L9080HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	OH STOP	100S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. 203

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	STOREROOM LOCK	L9080HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.203S

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	STOREROOM LOCK	L9080HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.**203W**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	**HINGE**	**5BB1HW 5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)**	**652**	**IVE**
1	**STOREROOM LOCK**	**L9080HD 17N**	**626**	**SCH**
1	**SFIC EVEREST CORE**	**80-037 EV29 R**	**626**	**SCH**
1	**WALL STOP**	**WS406/407CCV**	**630**	**IVE**
1	**GASKETING**	**488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)**	**BK**	**ZER**

Hardware Group No. 210

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	CONST LATCHING BOLT	FB51P/FB61P AS REQ (ROD LENGTH AS REQ - C/L AT 72" AFF) (PROVIDE AUTO. LATCHING FB31P/41P WHERE REQ PER CODE)	630	IVE
1	DUST PROOF STRIKE	DP2	626	IVE
1	STOREROOM LOCK	L9080HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	**COORDINATOR**	**COR X FL X MB X HW PREPS X LENGTH AS REQ**	**628**	**IVE**
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
2	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER
1	MEETING STILE	8193AA (2 PCS - 1 SET) (OMIT @ NON-RATED DOORS)	AA	ZER

Hardware Group No.**210CHS1**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	**HINGE**	**5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)**	**652**	**IVE**
1	**CONST LATCHING BOLT**	**FB51P/FB61P AS REQ (ROD LENGTH AS REQ - C/L AT 72" AFF) (PROVIDE AUTO. LATCHING FB31P/41P WHERE REQ PER CODE)**	**630**	**IVE**
1	**DUST PROOF STRIKE**	**DP2**	**626**	**IVE**
1	**STOREROOM LOCK**	**L9080HD 17N**	**626**	**SCH**
1	**SFIC EVEREST CORE**	**80-037 EV29 R**	**626**	**SCH**
1	**OH STOP & HOLDER**	**900H SERIES X SIZE & MOUNTING AS REQ**	**630**	**GLY**
1	**SURFACE CLOSER WITH HOLD OPEN**	**4040XP SHCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ**	**689**	**LCN**
2	**KICK PLATE**	**8400 10" X 1" LDW B-CS**	**630**	**IVE**
1	**GASKETING**	**488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)**	**BK**	**ZER**
1	**MEETING STILE**	**8193AA (2 PCS - 1 SET) (OMIT @ NON-RATED DOORS)**	**AA**	**ZER**

Hardware Group No. 241

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	STOREROOM W/ DEADBOLT & INDICATOR	L9480HD 17N L583-363 OS-OCC (INDICATOR)	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. 341

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	PRIVACY LOCK W/ OUTSIDE INDICATOR	L9040 17N L583-363 OS-OCC (INDICATOR)	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. ~~501- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~3~~	~~HINGE~~	~~5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)~~	~~652~~	~~IVE~~
~~1~~	~~CLASSROOM LOCK~~	~~L9070HD 17N~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~WALL STOP~~	~~WS406/407CCV~~	~~630~~	~~IVE~~
~~1~~	~~GASKETING~~	~~488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)~~	~~BK~~	~~ZER~~

Hardware Group No. 503

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	CLASSROOM LOCK	L9070HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. 541

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	CLASSROOM SECURITY W/ INSIDE INDICATOR	L9071HD 17N IS-LOC	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.**541AH**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	**CONT. HINGE**	**112XY**	**628**	**IVE**
1	**CLASSROOM SECURITY W/ INSIDE INDICATOR**	**L9071HD 17N IS-LOC**	**626**	**SCH**
2	**SFIC EVEREST CORE**	**80-037 EV29 R**	**626**	**SCH**
1	**SURFACE CLOSER WITH HOLD OPEN**	**4040XP H (HEDA @ PA) TBWMS X MTG BRKT, SPCR & PLATE AS REQ**	**689**	**LCN**
1	**WALL STOP**	**WS406/407CCV**	**630**	**IVE**
1	**SEAL**	**PERIMETER SEAL BY FRAME MFR**		

Hardware Group No.**541H**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	**HINGE**	**5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)**	**652**	**IVE**
1	**CLASSROOM SECURITY W/ INSIDE INDICATOR**	**L9071HD 17N IS-LOC**	**626**	**SCH**
2	**SFIC EVEREST CORE**	**80-037 EV29 R**	**626**	**SCH**
1	**SURFACE CLOSER WITH HOLD OPEN**	**4040XP H (HEDA @ PA) TBWMS X MTG BRKT, SPCR & PLATE AS REQ**	**689**	**LCN**
1	**KICK PLATE**	**8400 10" X 2" LDW B-CS**	**630**	**IVE**
1	**WALL STOP**	**WS406/407CCV**	**630**	**IVE**
1	**GASKETING**	**488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)**	**BK**	**ZER**

Hardware Group No. **541HW**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 5 X 4.5	652	IVE
1	CLASSROOM SECURITY W/ INSIDE INDICATOR	L9071HD 17N IS-LOC	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER WITH HOLD OPEN	4040XP H (HEDA @ PA) TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. **541W**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 5 X 4.5	652	IVE
1	CLASSROOM SECURITY W/ INSIDE INDICATOR	L9071HD 17N IS-LOC	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. ~~711C- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY~~	~~628~~	~~IVE~~
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-NL-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~GASKETING~~	~~488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)~~	~~BK~~	~~ZER~~

Hardware Group No.711CR

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	FIRE EXIT HARDWARE	99-L-NL-F-17-SNB LENGTH AS REQ	626	VON
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	GASKETING	488S PSA H & J (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.731R

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	FIRE EXIT HARDWARE	LD-99-L-BE-F-17-SNB LENGTH AS REQ	626	VON
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.**750CHM**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	CONT. HINGE	112XY	628	IVE
1	KEYED REMOVABLE MULLION	KR4954 STAB HEIGHT AS REQ	689	VON
1	PANIC HARDWARE	LD-99-L-2SI-17-SNB LENGTH AS REQ	626	VON
1	PANIC HARDWARE	LD-99-L-DT-17-SNB LENGTH AS REQ	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
2	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
3	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
2	SURFACE CLOSER WITH HOLD OPEN	4040XP SHCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
2	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER
1	MEETING STILE	8193AA (2 PCS - 1 SET) (OMIT @ NON-RATED DOORS)	AA	ZER
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER

Hardware Group No.~~750CHM - Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~2~~	~~CONT. HINGE~~	~~112XY~~	~~628~~	~~IVE~~
~~1~~	~~KEYED REMOVABLE MULLION~~	~~KR4954 STAB HEIGHT AS REQ~~	~~689~~	~~VON~~
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-2SI-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-DT-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~SFIC MORTISE CYLINDER~~	~~80-132 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~2~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~3~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~2~~	~~SURFACE CLOSER WITH HOLD OPEN~~	~~4040XP SHCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~2~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~GASKETING~~	~~488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)~~	~~BK~~	~~ZER~~
~~1~~	~~MEETING STILE~~	~~8193AA (2 PCS - 1 SET) (OMIT @ NON-RATED DOORS)~~	~~AA~~	~~ZER~~
~~1~~	~~MULLION SEAL~~	~~8780N PSA HEIGHT AS REQ~~	~~BK~~	~~ZER~~

Hardware Group No.~~750M - Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~2~~	~~CONT. HINGE~~	~~112XY~~	~~628~~	~~IVE~~
~~1~~	~~KEYED REMOVABLE MULLION~~	~~KR4954 STAB HEIGHT AS REQ~~	~~689~~	~~VON~~
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-2SI-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-DT-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~SFIC MORTISE CYLINDER~~	~~80-132 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~2~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~3~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~2~~	~~SURFACE CLOSER~~	~~4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)~~	~~689~~	~~LCN~~
~~2~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~2~~	~~WALL STOP~~	~~WS406/407CCV~~	~~630~~	~~IVE~~
~~1~~	~~GASKETING~~	~~488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)~~	~~BK~~	~~ZER~~
~~1~~	~~MEETING STILE~~	~~8193AA (2 PCS - 1 SET) (OMIT @ NON-RATED DOORS)~~	~~AA~~	~~ZER~~
~~1~~	~~MULLION SEAL~~	~~8780N PSA HEIGHT AS REQ~~	~~BK~~	~~ZER~~

Hardware Group No. 751

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-2SI-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
1	PANIC HARDWARE	LD-99-L-NL-17-SNB LENGTH AS REQ	626	VON
2	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.~~751A - Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY~~	~~628~~	~~IVE~~
~~1~~	~~PANIC HARDWARE~~	~~LD-99-L-2SI-17-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~2~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~2~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~WALL STOP~~	~~WS406/407CCV~~	~~630~~	~~IVE~~
~~1~~	~~SEAL~~	~~PERIMETER SEAL BY FRAME MFR~~		

Hardware Group No.751H

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	PANIC HARDWARE	LD-99-L-2SI-17-SNB LENGTH AS REQ	626	VON
2	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER WITH HOLD OPEN	4040XP H (HEDA @ PA) TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No.751R

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	FIRE EXIT HARDWARE	99-L-F-2SI-17-SNB LENGTH AS REQ	626	VON
2	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER

Hardware Group No. ~~801L- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY~~	~~628~~	~~IVE~~
~~1~~	~~CLASSROOM DEADBOLT~~	~~B663HD~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~PUSH PLATE~~	~~8200 4" X 16"~~	~~630~~	~~IVE~~
~~1~~	~~PULL PLATE~~	~~8303 10" 4" X 16" F~~	~~630~~	~~IVE~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~WALL STOP~~	~~WS406/407CCV~~	~~630~~	~~IVE~~
~~3~~	~~SILENCER~~	~~SR64~~	~~GRY~~	~~IVE~~

Hardware Group No. C201

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	EU MORTISE LOCK	L9092HDEU 17N RX CON (FAIL SECURE)	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	**WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR** ~~(CON-6W)~~		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	DOOR CONTACT	**DOOR CONTACT(S) BY SECURITY CONTRACTOR** ~~(679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS))~~	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR	LGR	SCE

Hardware Group No. ~~C201A- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~3~~	~~HINGE~~	~~5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)~~	~~652~~	~~IVE~~
~~1~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~1~~	~~EU MORTISE LOCK~~	~~L9092HDEU 17N RX CON (FAIL SECURE)~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~WALL STOP~~	~~WS406/407CCV~~	~~630~~	~~IVE~~
~~1~~	~~SEAL~~	~~PERIMETER SEAL BY FRAME MFR~~		
~~1~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~1~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~1~~	~~MULTITECH READER~~	~~MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~BLK~~	~~SCE~~
~~1~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~	~~LGR~~	~~SCE~~

Hardware Group No. C710AMV

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1 ~~(2)~~	CONT. HINGE	112XY EPT	628	IVE
1 ~~(2)~~	POWER TRANSFER	EPT10 CON	689	VON
1	KEYED REMOVABLE MULLION	KR4954 STAB HEIGHT AS REQ	689	VON
1	PANIC HARDWARE ~~(ELEC PANIC HARDWARE)~~	LD-99-EO-CON-SNB LENGTH AS REQ ~~(LD-RX-99-EO-CON-SNB LENGTH AS REQ)~~	626	VON
1	ELEC PANIC HARDWARE	QEL-99-NL-OP-CON-SNB LENGTH AS REQ ~~(RX-QEL-99-NL-OP-CON-SNB LENGTH AS REQ)~~	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 DT	630	IVE
1	DOOR PULL	VR910 NL	630	IVE
2	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	ASTRAGAL	MEETING STILE SEAL BY DOOR MFR		
2	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
2	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR ~~(CON-6W)~~		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR ~~(679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS))~~	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No. ~~C711C- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY EPT~~	~~628~~	~~IVE~~
~~1~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~1~~	~~ELEC PANIC HARDWARE~~	~~RX-QEL-99-L-NL-17-CON-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~GASKETING~~	~~488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)~~	~~BK~~	~~ZER~~
~~1~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~1~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~1~~	~~MULTITECH READER~~	~~MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~BLK~~	~~SCE~~
~~1~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~		~~VON~~

Hardware Group No. C714AM

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1 ~~(2)~~	CONT. HINGE	112XY EPT	628	IVE
1 ~~(2)~~	POWER TRANSFER	EPT10 CON	689	VON
1	KEYED REMOVABLE MULLION	KR4954XP STAB HEIGHT AS REQ	689	VON
1	PANIC HARDWARE ~~(ELEC PANIC HARDWARE)~~	LD-XP99-EO-CON-SNB LENGTH AS REQ ~~(LD-RX-XP99-EO-CON-SNB LENGTH AS REQ)~~	626	VON
1	ELEC PANIC HARDWARE	QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ ~~(RX-QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ)~~	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 DT	630	IVE
1	DOOR PULL	VR910 NL	630	IVE
2	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	ASTRAGAL	MEETING STILE SEAL BY DOOR MFR		
2	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	65A	A	ZER
2	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
2	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR ~~(CON-6W)~~		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR ~~(679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS))~~	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No. ~~C714M~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~2~~	~~CONT. HINGE~~	~~112XY EPT~~	~~628~~	~~IVE~~
~~2~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~1~~	~~KEYED REMOVABLE MULLION~~	~~KR4954XP STAB HEIGHT AS REQ~~	~~689~~	~~VON~~
~~1~~	~~ELEC PANIC HARDWARE~~	~~LD-RX-XP99-EO-CON-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~ELEC PANIC HARDWARE~~	~~RX-QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~SFIC MORTISE CYLINDER~~	~~80-132 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~1~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~2~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~DOOR PULL~~	~~VR910 DT~~	~~630~~	~~IVE~~
~~1~~	~~DOOR PULL~~	~~VR910 NL~~	~~630~~	~~IVE~~
~~2~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~2~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~RAIN DRIP~~	~~142AA DW + 4" (OMIT @ COVERED OPENINGS)~~	~~AA~~	~~ZER~~
~~1~~	~~SEALS~~	~~328AA H & J~~	~~AA~~	~~ZER~~
~~1~~	~~MEETING STILE~~	~~8193AA (2 PCS - 1 SET)~~	~~AA~~	~~ZER~~
~~1~~	~~MULLION SEAL~~	~~8780N PSA HEIGHT AS REQ~~	~~BK~~	~~ZER~~
~~2~~	~~DOOR SWEEP~~	~~8198AA~~	~~AA~~	~~ZER~~
~~1~~	~~THRESHOLD~~	~~65A~~	~~A~~	~~ZER~~
~~2~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~2~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~1~~	~~MULTITECH READER~~	~~MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~BLK~~	~~SCE~~
~~2~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~		~~VON~~

Hardware Group No. C715A

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY EPT	628	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	ELEC PANIC HARDWARE	**QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ** ~~**(RX-QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ)**~~	626	VON
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 NL	630	IVE
1	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	65A	A	ZER
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	**WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR** ~~**(CON-6W)**~~		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	DOOR CONTACT	**DOOR CONTACT(S) BY SECURITY CONTRACTOR** ~~**(679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS))**~~	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No. **C715GHPV**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY EPT	628	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	ELEC PANIC HARDWARE	QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ	626	VON
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 NL	630	IVE
1	SURFACE CLOSER WITH HOLD OPEN	4040XP SHCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	ARMOR PLATE	8400 32" X 2" LDW B-CS	630	IVE
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	HEAVY DUTY DOOR BOTTOM	355AA/364AA-Z49 TYPE AS REQ	AA	ZER
1	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	65A	A	ZER
2	VIEWER	U698	626	IVE
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE
1	MOTION SENSOR	MOTION SENSOR/RX BY SECURITY CONTRACTOR	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No.**CR201**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	HINGE	5BB1 4.5 X 4.5 (PROVIDE NRP @ OUTSWING, LOCKABLE DOORS)	652	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	EU MORTISE LOCK	L9092HDEU 17N CON (FAIL SECURE)	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	GASKETING	488S PSA H & J (USE SILENCERS @ NON-RATED DOORS) (PERIMETER SEAL BY ALF MFR @ ALF)	BK	ZER
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	REMOTE RELEASE	REMOTE RELEASE BY SECURITY CONTRACTOR	628	SCE
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE
1	MOTION SENSOR	MOTION SENSOR/RX BY SECURITY CONTRACTOR	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR	LGR	SCE

Hardware Group No. **CR201A**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY EPT	628	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	EU MORTISE LOCK	L9092HDEU 17N CON (FAIL SECURE)	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	WALL STOP	WS406/407CCV	630	IVE
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	REMOTE RELEASE	REMOTE RELEASE BY SECURITY CONTRACTOR	628	SCE
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE
1	MOTION SENSOR	MOTION SENSOR/RX BY SECURITY CONTRACTOR	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR	LGR	SCE

Hardware Group No. ~~CR201AC- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY EPT~~	~~628~~	~~IVE~~
~~1~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~1~~	~~EU MORTISE LOCK~~	~~L9092HDEU 17N RX CON (FAIL SECURE)~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~1~~	~~SEAL~~	~~PERIMETER SEAL BY FRAME MFR~~		
~~1~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~1~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~1~~	~~MULTITECH READER~~	~~MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~BLK~~	~~SCE~~
~~1~~	~~DESK MOUNT BUTTON~~	~~660-PB~~	~~628~~	~~SCE~~
~~1~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~	~~LGR~~	~~SCE~~

Hardware Group No. **CR701A**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY EPT	628	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	ELEC PANIC HARDWARE	QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ	626	VON
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP RW/PA X TBWMS X MTG BRKT, SPCR & PLATE AS REQ (EDA @ 180 DEGREE SWING)	689	LCN
1	WALL STOP	WS406/407CCV	630	IVE
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	REMOTE RELEASE	REMOTE RELEASE BY SECURITY CONTRACTOR	628	SCE
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE
1	MOTION SENSOR	MOTION SENSOR/RX BY SECURITY CONTRACTOR	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR	LGR	SCE

Hardware Group No. CR714AM

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	CONT. HINGE	112XY	628	IVE
1 ~~(2)~~	CONT. HINGE	112XY EPT	628	IVE
1 ~~(2)~~	POWER TRANSFER	EPT10 CON	689	VON
1	KEYED REMOVABLE MULLION	KR4954XP STAB HEIGHT AS REQ	689	VON
1	PANIC HARDWARE ~~(ELEC PANIC HARDWARE)~~	LD-XP99-EO-CON-SNB LENGTH AS REQ ~~(LD-RX-XP99-EO-CON-SNB LENGTH AS REQ)~~	626	VON
1	ELEC PANIC HARDWARE	QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ ~~(RX-QEL-XP99-NL-OP-CON-SNB LENGTH AS REQ)~~	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 DT	630	IVE
1	DOOR PULL	VR910 NL	630	IVE
2	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	ASTRAGAL	MEETING STILE SEAL BY DOOR MFR		
2	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	65A	A	ZER
2	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
2	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR ~~(CON-6W)~~		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	REMOTE RELEASE ~~(DESK MOUNT BUTTON)~~	REMOTE RELEASE BY SECURITY CONTRACTOR ~~(660-PB)~~	628	SCE
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR ~~(679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS))~~	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No. ~~D001L - Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~SFIC MORTISE CYLINDER~~	~~80-132 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~DOOR CONTACT~~	~~674-OH~~	~~628~~	~~SCE~~
	~~NOTE~~	~~REMAINDER OF HARDWARE BY DOOR MFR~~		

Hardware Group No. D205I

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	STOREROOM LOCK	L9080HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	SURFACE CLOSER	4040XP RW/PA MC TBWMS X MTG BRKT, SPCR & PLATE AS REQ (MOUNT ON INTERIOR)	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	656A	A	ZER
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE

Hardware Group No.**D714AM**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	CONT. HINGE	112XY	628	IVE
1	KEYED REMOVABLE MULLION	KR4954XP STAB HEIGHT AS REQ	689	VON
1	PANIC HARDWARE	LD-XP99-EO-CON-SNB LENGTH AS REQ	626	VON
1	PANIC HARDWARE	LD-XP99-NL-OP-SNB LENGTH AS REQ	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 DT	630	IVE
1	DOOR PULL	VR910 NL	630	IVE
2	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	ASTRAGAL	MEETING STILE SEAL BY DOOR MFR		
2	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	65A	A	ZER
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE

Hardware Group No. **D714M**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	CONT. HINGE	112XY	628	IVE
1	KEYED REMOVABLE MULLION	KR4954XP STAB HEIGHT AS REQ	689	VON
1	PANIC HARDWARE	LD-XP99-EO-CON-SNB LENGTH AS REQ	626	VON
1	PANIC HARDWARE	LD-XP99-NL-OP-SNB LENGTH AS REQ	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 DT	630	IVE
1	DOOR PULL	VR910 NL	630	IVE
2	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
2	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	MEETING STILE	8193AA (2 PCS - 1 SET)	AA	ZER
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER
2	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	65A	A	ZER
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE

Hardware Group No. ~~DE205 Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY EPT~~	~~628~~	~~IVE~~
~~1~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~1~~	~~STOREROOM LOCK~~	~~LV9080HD 17N RX~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~1~~	~~KICK PLATE~~	~~8400 10" X 2" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~RAIN DRIP~~	~~142AA DW + 4" (OMIT @ COVERED OPENINGS)~~	~~AA~~	~~ZER~~
~~1~~	~~SEALS~~	~~328AA H & J~~	~~AA~~	~~ZER~~
~~1~~	~~DOOR SWEEP~~	~~8198AA~~	~~AA~~	~~ZER~~
~~1~~	~~THRESHOLD~~	~~65A~~	~~A~~	~~ZER~~
~~1~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~1~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~1~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~	~~LGR~~	~~SCE~~

Hardware Group No. ~~DE214 Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~1~~	~~CONT. HINGE~~	~~112XY~~	~~628~~	~~IVE~~
~~1~~	~~CONT. HINGE~~	~~112XY EPT~~	~~628~~	~~IVE~~
~~1~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~2~~	~~MANUAL FLUSH BOLT~~	~~FB458-12"~~	~~626~~	~~IVE~~
~~1~~	~~DUST PROOF STRIKE~~	~~DP2~~	~~626~~	~~IVE~~
~~1~~	~~STOREROOM LOCK~~	~~LV9080HD 17N RX~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~1~~	~~SURFACE OH STOP~~	~~900S SERIES X SIZE & MOUNTING AS REQ~~	~~630~~	~~GLY~~
~~1~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~2~~	~~KICK PLATE~~	~~8400 10" X 1" LDW B-CS~~	~~630~~	~~IVE~~
~~1~~	~~RAIN DRIP~~	~~142AA DW + 4" (OMIT @ COVERED OPENINGS)~~	~~AA~~	~~ZER~~
~~1~~	~~SEALS~~	~~328AA H & J~~	~~AA~~	~~ZER~~
~~1~~	~~MEETING STILE~~	~~8193AA (2 PCS - 1 SET)~~	~~AA~~	~~ZER~~
~~2~~	~~DOOR SWEEP~~	~~8198AA~~	~~AA~~	~~ZER~~
~~1~~	~~THRESHOLD~~	~~65A~~	~~A~~	~~ZER~~
~~1~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~1~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~2~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~	~~LGR~~	~~SCE~~

Hardware Group No. DE710AMV

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	CONT. HINGE	112XY EPT	628	IVE
2	POWER TRANSFER	EPT10 CON	689	VON
1	KEYED REMOVABLE MULLION	KR4954 STAB HEIGHT AS REQ	689	VON
1	**PANIC HARDWARE** ~~**(ELEC PANIC HARDWARE)**~~	**LD-99-EO-CON-SNB LENGTH AS REQ** ~~**(LD-RX-99-EO-CON-SNB LENGTH AS REQ)**~~	626	VON
1	ELEC PANIC HARDWARE	**QEL-99-NL-OP-CON-SNB LENGTH AS REQ** ~~**(RX-QEL-99-NL-OP-CON-SNB LENGTH AS REQ)**~~	626	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
2	DOOR PULL	VR910 DT	630	IVE
2	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER
1	SEAL	PERIMETER SEAL BY FRAME MFR		
1	ASTRAGAL	MEETING STILE SEAL BY DOOR MFR		
2	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
2	WIRE HARNESS (TO POWER SUPPLY)	**WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR** ~~**(CON-6W)**~~		SCH
2	DOOR CONTACT	**DOOR CONTACT(S) BY SECURITY CONTRACTOR** ~~**(679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS))**~~	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No. ~~DE774AM- Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~2~~	~~CONT. HINGE~~	~~112XY EPT~~	~~628~~	~~IVE~~
~~2~~	~~POWER TRANSFER~~	~~EPT10 CON~~	~~689~~	~~VON~~
~~1~~	~~KEYED REMOVABLE MULLION~~	~~KR4954XP STAB HEIGHT AS REQ~~	~~689~~	~~VON~~
~~1~~	~~ELEC PANIC HARDWARE~~	~~LD-RX-XP99-EO-CON-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~ELEC PANIC HARDWARE~~	~~RX-QEL-XP99-EO-CON-SNB LENGTH AS REQ~~	~~626~~	~~VON~~
~~1~~	~~SFIC MORTISE CYLINDER~~	~~80-132 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~1~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~2~~	~~DOOR PULL~~	~~VR910 DT~~	~~630~~	~~IVE~~
~~2~~	~~SURFACE CLOSER~~	~~4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~1~~	~~RAIN DRIP~~	~~142AA DW + 4" (OMIT @ COVERED OPENINGS)~~	~~AA~~	~~ZER~~
~~1~~	~~MULLION SEAL~~	~~8780N PSA HEIGHT AS REQ~~	~~BK~~	~~ZER~~
~~1~~	~~SEAL~~	~~PERIMETER SEAL BY FRAME MFR~~		
~~1~~	~~ASTRAGAL~~	~~MEETING STILE SEAL BY DOOR MFR~~		
~~2~~	~~DOOR SWEEP~~	~~8198AA~~	~~AA~~	~~ZER~~
~~1~~	~~THRESHOLD~~	~~65A~~	~~A~~	~~ZER~~
~~2~~	~~WIRE HARNESS (IN DOOR)~~	~~ALLEGION CONNECT TYPE & LENGTH AS REQ~~		~~SCH~~
~~2~~	~~WIRE HARNESS (TO POWER SUPPLY)~~	~~CON-6W~~		~~SCH~~
~~2~~	~~DOOR CONTACT~~	~~679-05 TYPE AS REQ (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)~~	~~WHT~~	~~SCE~~
~~1~~	~~POWER SUPPLY~~	~~POWER SUPPLY BY SECURITY CONTACTOR~~		~~VON~~

Hardware Group No. **J002**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	SFIC CYLINDER	TYPE AS REQ W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
	NOTE	BALANCE OF HARDWARE BY GATE MFR		

Hardware Group No.J714M

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	GATE HINGE/CLOSER	MAMMOTH 180 HINGE & CLOSER W/DINO BOTTOM HINGE (SUPPORTS UP TO 330LBS)		LOX
1	CENTER MULLION/POST	CENTER MULLION/POST BY GATE MFR		
1	PANIC HARDWARE	LD-OUT-99-EO-SNB LENGTH AS REQ	US26D	VON
1	PANIC HARDWARE	LD-OUT-99-NL-OP-SNB LENGTH AS REQ	US26D	VON
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 NL	630	IVE
	NOTE	BALANCE OF HARDWARE BY GATE MFR		

Hardware Group No.J715

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	GATE HINGE/CLOSER	MAMMOTH 180 HINGE & CLOSER W/DINO BOTTOM HINGE (SUPPORTS UP TO 330LBS)		LOX
1	PANIC HARDWARE	LD-OUT-99-NL-OP-SNB LENGTH AS REQ	US26D	VON
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	DOOR PULL	VR910 NL	630	IVE
	NOTE	BALANCE OF HARDWARE BY GATE MFR		

Hardware Group No.~~T758R.1 Not Used~~

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
~~6~~	~~HINGE~~	~~5BB1HW 4.5 X 4.5~~	~~652~~	~~IVE~~
~~1~~	~~FIRE EXIT HARDWARE~~	~~WS-T-9927-EO-F-SNB LENGTH & HEIGHT AS REQ~~	~~626~~	~~VON~~
~~1~~	~~FIRE EXIT HARDWARE~~	~~WS-T-9927-L-BE-F-2SI-17-377TKC-SNB LENGTH & HEIGHT AS REQ~~	~~626~~	~~VON~~
~~2~~	~~ROD AND LATCH GUARD~~	~~WS-LGO LENGTH AS REQ~~	~~630~~	~~VON~~
~~1~~	~~SFIC MORTISE CYLINDER~~	~~80-132 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~2~~	~~SFIC RIM CYLINDER~~	~~80-159 W/KEYED CONST. CORE~~	~~626~~	~~SCH~~
~~3~~	~~SFIC EVEREST CORE~~	~~80-037 EV29 R~~	~~626~~	~~SCH~~
~~2~~	~~SURFACE CLOSER~~	~~4040XP RW/PA MC TBWMS X MTG BRKT, SPCR & PLATE AS REQ~~	~~689~~	~~LCN~~
~~2~~	~~FIRE/LIFE WALL MAG~~	~~SEM7800 SERIES AS REQ~~	~~689~~	~~LCN~~
~~1~~	~~GASKETING~~	~~488S PSA H & J~~	~~BK~~	~~ZER~~
~~1~~	~~MEETING STILE~~	~~8193AA (2 PCS - 1 SET) HEIGHT AS REQ~~	~~AA~~	~~ZER~~

Hardware Group No. **TC784.1**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	CONT. HINGE	112XY EPT	628	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	PANIC HARDWARE	LD-WS-T-9927-EO-CON-SNB LENGTH & HEIGHT AS REQ	626	VON
1	ELEC PANIC HARDWARE	QEL-ESL-WS-T-9927-L-KC-17-CON-SNB LENGTH & HEIGHT AS REQ	626	VON
1	ROD AND LATCH GUARD	WS-LGO LENGTH AS REQ	630	VON
1	SFIC MORTISE CYLINDER	80-132 W/KEYED CONST. CORE (FOR ESL)	626	SCH
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE (FOR L-KC)	626	SCH
2	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
2	SURFACE CLOSER	4040XP SCUSH MC TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	MEETING STILE	8193AA (2 PCS - 1 SET)	AA	ZER
1	MULLION SEAL	8780N PSA HEIGHT AS REQ	BK	ZER
2	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	656A	A	ZER
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR		SCH
1	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE
1	MOTION SENSOR	MOTION SENSOR/RX BY SECURITY CONTRACTOR	WHT	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

Hardware Group No.TD205C

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	MULT PT STOREROOM	LMV9380HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	656A	A	ZER
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE

Hardware Group No.TD214

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	CONT. HINGE	112XY	628	IVE
1	SURFACE BOLT	SB360-WS-OUTSWING 12" T X TBWMS	604	IVE
1	MULT PT STOREROOM	LMV9380HD 17N	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE OH STOP	900S SERIES X SIZE & MOUNTING AS REQ	630	GLY
1	SURFACE CLOSER	4040XP SCUSH MC TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
2	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	ASTRAGAL	ASTRAGAL BY DOOR MFR		
2	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	656A	A	ZER
2	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE

Hardware Group No.**TD715**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY	628	IVE
1	PANIC HARDWARE	LD-WS-T-9957-L-KC-17-SNB LENGTH & HEIGHT AS REQ	626	VON
1	ROD AND LATCH GUARD	WS-LGO LENGTH AS REQ	630	VON
1	SFIC RIM CYLINDER	80-159 W/KEYED CONST. CORE	626	SCH
1	SFIC EVEREST CORE	80-037 EV29 R	626	SCH
1	SURFACE CLOSER	4040XP SCUSH MC TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	656A	A	ZER
1	DOOR CONTACT	DOOR CONTACT(S) BY SECURITY CONTRACTOR	WHT	SCE

Hardware Group No.**X727C**

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	CONT. HINGE	112XY EPT	628	IVE
1	POWER TRANSFER	EPT10 CON	689	VON
1	DELAYED PANIC HARDWARE	CX99-EO-CON-SNB LENGTH AS REQ	626	VON
1	MORTISE CYLINDER	1E74	626	BES
1	SFIC PERMANENT CORE	1C7 (VERIFY WITH OWNER)	626	BES
1	SFIC CONST. CORE	C607CCA	622	FAL
1	DOOR PULL	VR910 DT	630	IVE
1	SURFACE CLOSER	4040XP SCUSH X TBWMS X MTG BRKT, SPCR & PLATE AS REQ	689	LCN
1	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	WALL STOP	WS406/407CCV	630	IVE
1	RAIN DRIP	142AA DW + 4" (OMIT @ COVERED OPENINGS)	AA	ZER
1	SEALS	328AA H & J	AA	ZER
1	DOOR SWEEP	8198AA	AA	ZER
1	THRESHOLD	656A	A	ZER
1	WIRE HARNESS (IN DOOR)	ALLEGION CONNECT TYPE & LENGTH AS REQ		SCH
1	WIRE HARNESS (TO POWER SUPPLY)	WIRE HARNESS (TO POWER SUPPLY) BY SECURITY CONTRACTOR		SCH
2	MULTITECH READER	MT SERIES READER BY DIV 28 (COORDINATE WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS)	BLK	SCE
1	POWER SUPPLY	POWER SUPPLY BY SECURITY CONTACTOR		VON

-EXIT ONLY. NO ENTRY.
-VERIFY APPLICATION IS ACCEPTABLE PER AHJ PRIOR TO ORDERING.

-DELAYED EGRESS BY THE PUSH PAD - DEPRESSING PUSHBAR OF PANIC DEVICE FOR DESIGNATED AMOUNT OF TIME BEGINS IRREVERSIBLE ALARM CYCLE.
-UPON COMPLETION OF ALARM CYCLE FREE EGRESS IS ALLOWED.
-DEVICE CAN BE ARMED, RESET OR DISARMED BY ACCESS CONTROL SYSTEM OR MORTISE CYLINDER IN PANIC.
-DELAYED EGRESS SYSTEM UNLOCKS UPON ACTIVATION OF FIRE ALARM ALLOWING EMERGENCY FREE EGRESS.
-COORDINATE POWER SUPPLY WITH SECURITY CONTRACTOR PRIOR TO SUBMITTALS.
-OMIT POWER SUPPLY WHERE PROVIDED BY SECURITY.
-VERIFY ALUMINUM DOOR IS WIDE STILE.
-5" STILE IS REQUIRED FOR THE SPECIFIED HARDWARE, COORDINATE WITH DOOR MFR./SUPPLIER.

END OF SECTION 087100

OPT0404215

V2 1/31/2025 vs. V3 1/29/2026

Door#	HwSet#
~~1F1~~	~~DE205~~
A1S1	731R
A1S1A	X727C
A2S1	731R
A100	C714AM ~~(750M)~~
A100A	201 ~~(001L)~~
A101	CR701A ~~(CR201AC)~~
A101A	CR201A ~~(C201A)~~
A102	541H ~~(541)~~
A102A	541HW ~~(203)~~
A102B	203W ~~(203)~~
A102C	203W ~~(541)~~
A102D	C715A
A103	541H ~~(541)~~
A104	201 ~~(C201)~~
A105	711CR ~~(C711C)~~
A106	201 ~~(T758R.1)~~
A106A	D714M
A106B	J714M
A106C	J714M
A109	201 ~~(210)~~
~~A109A~~	~~TD214~~
A110	241 ~~(201)~~
A111	541 ~~(241)~~
A112	541H ~~(T758R.1)~~
~~A112A~~	~~201~~
~~A112B~~	~~210~~
~~A112C~~	~~750M~~
A113	541H ~~(711C)~~
A114	541H ~~(C714AM)~~
~~A114A~~	~~001L~~
A115	541H ~~(541)~~
A116	201 ~~(541)~~
A117	751 ~~(541)~~
A117A	C201
A118	103 ~~(541)~~
A119	341 ~~(541)~~
~~A119A~~	~~103~~
A120	103 ~~(541)~~
~~A120A~~	~~C201~~
A121	CR201 ~~(103)~~
A121A	103
~~A122~~	~~103~~

Door#	HwSet#
~~A122A~~	~~103~~
~~A123~~	~~103~~
~~A200~~	~~750M~~
A200A	201
A201	541H ~~(541)~~
A202	541AH ~~(541)~~
A203	541H ~~(541)~~
A204	201 ~~(C201)~~
A205	201 ~~(C711C)~~
A206	201
A207	201C
A210	201 ~~(210)~~
A211	241 ~~(201)~~
A212	541 ~~(241)~~
A213	541H ~~(750M)~~
A214	541H ~~(751)~~
~~A214A~~	~~751~~
~~A214B~~	~~201C~~
~~A214C~~	~~203S~~
~~A214D~~	~~203S~~
A215	541 ~~(751)~~
~~A215A~~	~~751~~
A216	751R ~~(541)~~
A216A	203S
A216B	203
A216C	751R
A217	751H (541)
A217A	201S
A217B	751H
~~A218~~	~~541~~
B100	CR714AM
B100A	D714AM ~~(DE774AM)~~
B100B	C710AMV
B100C	DE710AMV
B100D	C714AM
B100E	D714AM ~~(DE774AM)~~
B101	541 ~~(501)~~
B101A	503
~~B101B~~	~~341~~
B102	751 ~~(541)~~
~~B102A~~	~~341~~
~~B102B~~	~~103~~
~~B102C~~	~~103~~
~~B102D~~	~~103~~
~~B102F~~	~~541~~
B103	201 ~~(541)~~

Door#	HwSet#
~~B103A~~	~~103~~
~~B103B~~	~~203~~
~~B103C~~	~~341~~
B104	103
B105	103
B106	103
B108	341
B109	541
B109A	341
B109B	103
B109C	103
B110	201
B201	541H ~~(541)~~
B202	751H ~~(541)~~
B202A	103
B203	201 (751A)
~~B203A~~	~~541~~
C100	C714AM
C100A	001L
C101	750CHM ~~(750M)~~
~~C101A~~	~~750M~~
~~C101B~~	~~751~~
C101C	TC784.1 ~~(210)~~
~~C101D~~	~~751~~
~~C101E~~	~~C714M~~
C102	751 ~~(750M)~~
~~C103~~	~~541~~
~~C103A~~	~~341~~
~~C104~~	~~801L~~
C105	103 ~~(241)~~
C105A	341
C106	210CHS1 ~~(241)~~
C107	751 ~~(201)~~
~~C107A~~	~~203~~
C108	201 ~~(541)~~
~~C108A~~	~~201~~
~~C108B~~	~~103~~
~~C108C~~	~~341~~
~~C108D~~	~~201~~
~~C108E~~	~~D001L~~
~~C108F~~	~~D001L~~
~~C108G~~	~~D001L~~
~~C108H~~	~~C715GHPV~~
C109	711CR ~~(750CHM)~~
~~C109A~~	~~201~~
~~C109B~~	~~750CHM~~

Door#	HwSet#
~~C109C~~	~~C714AM~~
~~C109D~~	~~DE774AM~~
C110	201 ~~(C201)~~
C111	201 ~~(C714M)~~
C112	541W ~~(541)~~
C112A	TD214 ~~(DE214)~~
C113	TD205C ~~(711C)~~
C114	TD715 ~~(201)~~
C115	241
C116	203
~~C116A~~	~~203~~
C117	541
C117A	203
C117B	103
C117C	341
C117D	201S
C117E	001L
C117F	001L
C117G	001L
C117H	C715GHPV
C118	750CHM
C118A	750CHM
C118B	210
C118C	C714AM
C118D	C714AM
C119	D205I
C120	001L
C121	001L
C125	750CHM
G01	J715
G03	J002
G04	J714M
G05	J714M
G06	J715
G07	J002

SECTION 088300 - MIRRORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Silvered flat glass mirrors (teachers wall storage).

B. Related Requirements:
   1. Section 123213 “Manufactured Wood-Veneer-Faced Casework” for teachers wall storage.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

   1. Mirrors: Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.

B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.

C. Samples: For each type of the following:

   1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.
   2. Mirror Clips: Full size.
   3. Mirror Trim: 12 inches long.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of mirror.

C. Preconstruction Test Reports: From mirror manufacturer indicating that mirror mastic was tested for compatibility and adhesion with mirror backing and substrates on which mirrors are installed.

D. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For mirrors, to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified Installer, who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect mirrors in accordance with mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.

B. Source Limitations for Mirror Accessories: Obtain mirror-glazing accessories from single source.

2.2 SILVERED FLAT GLASS MIRRORS (TEACHERS WALL STORAGE)

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

1. Dulles Glass & Mirror.
2. Gilded Mirrors, Inc.
3. Guardian Glass LLC.
4. National Glass Industries, Inc.
5. Trulite Glass & Aluminum Solutions, LLC.
6. Architect approved equal

B. Laminated Mirrors: ASTM C1172, Type II.

1. Glass for Outer Lite: Annealed float glass, Mirror Select Quality, clear, low-iron.
2. Nominal Thickness for Outer Lite: 3.0 mm
3. Glass for Inner Lite: Tempered float glass; ASTM C1048, Type I; Quality-Q3; Class I (clear), Kind FT, Condition A.
4. Nominal Thickness for Inner Lite: 3.0 mm

5. Interlayer: Mirror manufacturer's standard 0.030-inch-thick, clear polyvinyl-butyral interlayer with a proven record of showing no tendency to delaminate from, or cause damage to, silver coating.
6. Polish edges
7. Coordinate cutouts for railing mounts
8. Provide at locations indicated in Drawings.

2.3 MISCELLANEOUS MATERIALS

A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.

B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.

C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.

2.4 MIRROR HARDWARE

A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.

1. Aluminum J-Channel Bottom and Side Trim: J-channels formed with front leg and back leg not less than 3/8 and 7/8 inch in height, respectively, and a thickness of not less than 0.04 inch.

2. Aluminum J-Channel Top Trim: J-channels formed with front leg and back leg not less than 5/8 and 1 inch in height, respectively, and a thickness of not less than 0.04 inch.

3. Finish: Clear anodized.

B. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

C. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors. Provide galvanized anchors and inserts for applications on inside face of exterior walls and where indicated.

2.5 FABRICATION

A. Shop fabricate mirrors to greatest extent possible.

B. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts, so they fit closely around penetrations in mirrors.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.

B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.

C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

A. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

3.3 INSTALLATION

A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced National Glass Association (NGA) publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.

B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.

C. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.

1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.
2. Install mastic as follows:

    a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
    b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
    c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.

3.4 CLEANING AND PROTECTION

A. Protect mirrors from breakage and contaminating substances resulting from construction operations.

B. Do not permit edges of mirrors to be exposed to standing water.

C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.

D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer and NGA's publication "Proper Procedures for Cleaning Flat Glass Mirrors."

END OF SECTION 088300

SECTION 095446 - FABRIC-WRAPPED CEILING PANELS

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 shop-fabricated, fabric-wrapped ceiling panels.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include fabric facing, panel edge, core material, and mounting indicated.

B. Shop Drawings: For panel assembly and installation.

1. Include reflected ceiling plans, elevations, sections, and mounting devices and details.
2. Include details at joints and corners; and details at ceiling intersections and intersections with walls. Indicate panel edge profile and core materials.
3. Include direction of fabric weave and pattern matching.

C. Samples for Initial Selection: For each type of fabric facing.

1. Include Samples of hardware and accessories involving color or finish selection.

D. Samples for Verification: For the following products:

1. Fabric: Full-width by approximately 36-inch-long Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.
2. Panel Edge: 12-inch-long Sample(s) showing each edge profile, corner, and finish.
3. Core Material: 12-inch-square Sample at corner.
4. Mounting Devices: Full-size Samples.
5. Assembled Panels: Approximately 36 by 36 inches, including joints and mounting methods.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Electrical outlets.
2. Suspended ceiling components above ceiling panels.
3. Structural members to which suspension devices will be attached.
4. Items penetrating or covered by panels including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Alarms.
    e. Sprinklers.
    f. Access panels.

5. Show operation of hinged and sliding components covered by or adjacent to panels.

B. Product Certificates: For each type of panel.

C. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of panel to include in maintenance manuals. Include fabric manufacturer's written cleaning and stain-removal instructions.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials, fabrication, and installation.

1. Build mockup of typical ceiling area 96 inches wide by full width of ceiling. Include intersection of wall and ceiling, corners, and perimeters.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Comply with fabric and panel manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials and panels in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install panels until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Air-Quality Limitations: Protect panels from exposure to airborne odors, such as tobacco smoke, and install panels under conditions free from odor contamination of ambient air.

C. Field Measurements: Verify panel locations and actual dimensions of openings and penetrations by field measurements before fabrication, and indicate them on Shop Drawings.

1.10 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace panels and components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain fabric-wrapped ceiling panels from single source from single manufacturer.

B. Products (Basis of Design): As indicated on Drawings.

C. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
1. Conwed
2. Acoustical Solutions
3. G&S Acoustics
4. Kinetics
5. Architect approved equal

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: Panels shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

a. Flame-Spread Index: 25 or less.
b. Smoke-Developed Index: 450 or less.

2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 286.

2.3 FABRIC-WRAPPED CEILING PANELS (AWP-#)

A. Fabric-Wrapped Ceiling Panel: Manufacturer's standard panel construction consisting of facing material laminated to front face, edges, and back edge border of core.

1. Panel Shape: Flat
2. Mounting: Back mounted with manufacturer's standard metal clips secured to substrate.
3. Core: Manufacturer's standard.
4. Edge Construction: Manufacturer's standard chemically hardened core with no frame.
5. Edge Profile: Square.

6. Corner Detail in Elevation: Square with continuous edge profile indicated.
7. Reveals between Panels: As indicated on Drawings.
8. Facing Material: As indicated on Drawings.
9. Overall Panel Thickness: As indicated on Drawings.
10. Panel Width: As indicated on Drawings.
11. Panel Height: As indicated on Drawings.

2.4 MATERIALS

A. Core Materials: Manufacturer's standard.

B. Facing Material: Fabric from same dye lot; color and pattern as selected by Architect from manufacturer's full range.
1. Pattern: Manufacturer standard for product indicated.
2. Color: To be selected by Architect from manufacturer's full range.
3. Fiber Content: Manufacturer standard for product indicated.
4. Width: Manufacturer standard for product indicated.
5. Applied Treatments: Manufacturer standard for product indicated.
6. Light Reflectance: Average value not less than 0.75 when tested according to ASTM E1477.
7. Lining Material: Manufacturer's standard fabric for each use indicated.

C. Lining Material: Fabric As selected by Architect from manufacturer's full range.
1. Color: Manufacturer standard for product indicated.
2. Fiber Content: Manufacturer standard for product indicated.
3. Width: Manufacturer standard for product indicated.
4. Applied Treatments: Manufacturer standard for product indicated.

D. Mounting Devices: Concealed on back of panel, recommended by manufacturer to support weight of panel.

2.5 FABRICATION

A. Standard Construction: Use manufacturer's standard construction except as otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.

B. Edge Hardening: For cores, chemically harden core edges and areas of core where mounting devices are attached.

C. Core Overlay: Evenly stretched over core face and edges and securely attached to core; free from puckers, ripples, wrinkles, or sags.

D. Facing Material and Lining Material: Apply fabric fully covering visible surfaces of panel; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.

1. Square Corners: Tailor corners.
2. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches adjacent panels.

E. Dimensional Tolerances of Finished Panels: Plus or minus 1/16 inch for the following:

1. Thickness.
2. Edge straightness.
3. Overall length and width.
4. Squareness from corner to corner.

5. Chords, radii, and diameters.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabric, fabricated panels, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting panel performance.

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

3.2 INSTALLATION

A. Install panels in locations indicated. Unless otherwise indicated, install units with edges in alignment with walls and other panels, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

B. Comply with panel manufacturer's written instructions for installation of panels using type of mounting devices indicated. Mount panels securely to supporting substrate.

C. Align fabric pattern and grain with adjacent panels and as shown on Drawings.

3.3 INSTALLATION TOLERANCES

A. Variation from Alignment with Surfaces: Plus or minus 1/16 inch in 48 inches, noncumulative.

B. Variation from Level or Slope: Plus or minus 1/16 inch.

C. Variation of Joint Width: Not more than 1/16 inch wide from hairline in 48 inches, noncumulative.

3.4 CLEANING

A. Clip loose threads; remove pills and extraneous materials.

B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 095446

SECTION 102123 - CUBICLE CURTAINS AND TRACK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cubicle-curtain support systems.
2. Cubicle curtains.

B. Related Requirements:
1. Section 061053 “Miscellaneous Rough Carpentry” for supplementary wood framing and blocking for mounting items requiring anchorage.
2. Section 092216 "Non-Structural Metal Framing" for supplementary metal framing and blocking for mounting items requiring anchorage.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. For each type of curtain fabric indicated, include durability, laundry temperature limits, fade resistance, applied curtain treatments, and fire-test-response characteristics.

B. Shop Drawings: For curtains and tracks.

1. Show layout and types of cubicles, sizes of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.
2. Include details of blocking for track support.

C. Samples: For each exposed product and for each color and texture specified, 12 inches in size.

D. Samples for Initial Selection: For each type of curtain material indicated.

E. Samples for Verification: For each type of product required, prepared on Samples of size indicated below:

1. Curtain Fabric: Not less than 12 inches square and showing complete pattern repeat, from dye lot used for the Work, with specified treatments applied. Mark top and face of material.
2. Mesh Top: Not less than 12 inches square.
3. Curtain Track: Not less than 12 inches long.
4. Curtain Carrier: Full-size unit.

F. Product Schedule: For curtains and tracks.

1.3 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For curtains, tracks, and hardware to include in operation and maintenance manuals.

1.4 MOCKUPS

A. Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Build mockup of typical cubicle as shown on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Cubicle Curtains: Provide curtain fabrics with the following characteristics:

1. Laundering: Launderable to a water temperature of not less than 160 deg F.
2. Flame Resistance: Provide fabrics identical to those that have passed NFPA 701 when tested by a qualified testing agency acceptable to authorities having jurisdiction.

    a. Identify fabrics with appropriate markings of a qualified testing agency.

2.2 CUBICLE-CURTAIN SUPPORT SYSTEMS

A. Product and Manufacturer: As indicated on Drawings.

B. Extruded-Aluminum Curtain Track: Not less than 1-1/4 inches wide by 3/4 inch high.

1. Track Minimum Wall Thickness: Manufacturer's standard.
2. Curved Track: Factory-fabricated, 12-inch-radius bends.
3. Finish: As indicated on Drawings.

C. Curtain-Track Mounting: As indicated on Drawings.

D. Curtain Track Accessories: Fabricate splices, end caps, connectors, end stops, coupling and joining sleeves, wall flanges, brackets, ceiling clips, and other accessories from same material and with same finish as track.

1. Suspended-Track Support: Not less than 7/8-inch-OD tube.
2. End Stop: Nonremovable.

E. Curtain Roller Carriers: Manufacturer standard..

F. Concealed Fasteners: Stainless steel.

2.3 CUBICLE CURTAINS (PC-#)

A. Product and Manufacturer: As indicated on Drawings.

B. Fabric: Curtain manufacturer's standard, 100 percent polyester; inherently and permanently flame resistant, stain resistant, and antimicrobial.

1. Pattern: As indicated on Drawings.
2. Width: As indicated on Drawings.
3. Color: As indicated on Drawings.

C. Curtain Grommets: Two-piece, rolled-edge, rustproof, nickel-plated brass; spaced not more than 6 inches o.c.; machined into top hem.

D. Mesh Top: Not less than 20-inch-high mesh top.

E. PVC-Strip Curtain Drop: 18 inches long with chrome-plated steel hook.

F. Snap Attachments: Provide manufacturer's standard nickel-plated brass snap attachments for modular panels.

G. Curtain Tieback: Nickel-plated brass chain; one at each curtain termination.

2.4 CURTAIN FABRICATION

A. Continuous Curtain Panels:

1. Width: Equal to track length from which curtain is hung plus 10 percent of added fullness, but not less than 12 inches of added fullness.
2. Length: Equal to floor-to-ceiling height, minus depth of track and carrier at top, and minus clearance above the finished floor of 12 inches.
3. Mesh Top: Top hem of mesh not less than 1 inch and not more than 1-1/2 inches wide, triple thickness, reinforced with integral web, and double lockstitched. Double lockstitch bottom of mesh directly to 1/2-inch triple thickness, top hem of curtain fabric.
4. Bottom Hem: Not less than 1 inch and not more than 1-1/2 inches wide, double thickness and double lockstitched.
5. Side Hems: Not less than 1/2 inch and not more than 1-1/4 inches wide, with double turned edges, and single lockstitched.
6. Vertical Seams: Not less than 1/2 inch wide, double turned and double stitched.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Install tracks level and plumb, according to manufacturer's written instructions.

B. For tracks of up to 20 feet in length, provide track fabricated from single, continuous length.

C. Track Mounting:

1. Surface-Track: Fasten tracks to ceilings at intervals recommended by manufacturer. Fasten tracks to structure at each splice and tangent point of each corner. Center fasteners in track to ensure unencumbered carrier operation. Attach track to ceiling per manufacturers written instructions for track type indicated.

D. Track Accessories: Install splices, end caps, connectors, end stops, coupling and joining sleeves, and other accessories as required for a secure and operational installation.

E. Curtain Carriers: Provide curtain carriers adequate for 6-inch spacing along full length of curtain plus an additional carrier.

F. Cubicle Curtains: Hang curtains on each curtain track.

END OF SECTION 102123

SECTION 105613 - METAL STORAGE SHELVING

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. Four-post metal storage shelving.

1.3 COORDINATION

A. Coordinate sizes and locations of blocking and backing required for installation of metal storage shelving attached to wall and ceiling assemblies.

B. Coordinate locations and installation of metal storage shelving that may interfere with ceiling systems including lighting, HVAC, speakers, sprinklers, access panels, electrical switches or outlets, and floor drains.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include rated capacities, construction details, material descriptions, dimensions of individual components and profiles, and finishes for metal storage shelving.

B. Shop Drawings: For metal storage shelving.
   1. Include plans, elevations, sections, and attachment details.
   2. Include installation details of connectors, lateral bracing, and special bracing.

C. Samples: For each type of metal storage shelving and for each color specified, in the following sizes:
   1. Vertical Supports: 12 inches tall.
   2. Shelves: Full size, but not more than 24 inches wide by 12 inches deep.
   3. Connectors: Full size.
   4. Shelf-Label Holders: Full size.

D. Samples for Initial Selection: For each type of metal storage shelving with factory-applied color finishes.
   1. Include Samples of accessories involving color selection.

E. Samples for Verification: For the following components, of size indicated below:
   1. Vertical Supports: 12 inches tall.
   2. Shelves: Full size, but not more than 24 inches wide by 12 inches deep.

3. Connectors: Full size.
4. Shelf-Label Holders: Full size.

F. Product Schedule: For metal storage shelving. Use same designations indicated on Drawings.

G. Delegated-Design Submittal: For seismic restraint of metal storage shelving.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Certificates: For metal storage shelving, accessories, and components, from manufacturer.

C. Product Certificates: For each type of metal storage shelving.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For metal storage shelving to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Shelves: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 5 shelves.
2. Shelf-to-Post Connectors: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 10 connectors.
3. Shelf-Label Holders: Full-size units equal to 5 percent of amount installed for each type indicated, but no fewer than 10 holders.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.10 FIELD CONDITIONS

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design metal storage shelving, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

2.2 FOUR-POST METAL STORAGE SHELVING

A. Open Four-Post Metal Storage Shelving: Complying with MH 28.1 and field assembled from factory-formed components. Shelves span between supporting corner posts that allow shelf-height adjustment over full height of shelving unit. Provide fixed top and bottom shelves, adjustable intermediate shelves, and accessories indicated.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      a. EQUIPTO.
      b. Hallowell.
      c. Penco Products, Inc.
      d. Republic Storage Systems, LLC.
      e. Architect approved equal

   2. Load-Carrying Capacity per Shelf: 350 lb unless indicated otherwise.
   3. Posts: Fabricated from hot-rolled steel; in manufacturer's standard shape; with perforations at 1-1/2 inches o.c. to receive shelf-to-post connectors.
      a. Unit Configuration: Configure shelving units as individual, freestanding assemblies.
      b. Post Base: Adjustable steel floor plate, drilled for floor anchors.
   4. Bracing: Manufacturer's standard, single or double diagonal cross bracing.
      a. Location: At unit back and ends as required for stability, load-carrying capacity of shelves, and number of shelves indicated.
   5. Solid-Type Shelves:
      a. Metallic-Coated Steel Sheet: Nominal thickness as required for load-carrying capacity per shelf.
      b. Fabricate fronts and backs of shelves with vertical edges that are flanged and returned, with edges reinforced with steel angles or channels.
   6. Shelf Quantity: Three shelves per shelving unit in addition to top and bottom shelf.
   7. Shelf-to-Post Connectors: Mechanical fasteners (nuts and bolts).
   8. Base: Open, with exposed post legs.
   9. Overall Unit Width: 36 inches and 48 inches, inclusive of two end posts, as indicated on the drawings.
   10. Overall Unit Depth: 12 inches, 18 inches and 24 inches, as indicated on the drawings.
   11. Overall Unit Height: 72 inches.
   12. Steel Finish: Baked enamel or powder coat.
      a. Color and Gloss: As selected by Architect from manufacturer's full range.

B. Wire-Type, Four-Post Metal Storage Shelving: Complying with MH 28.1; field assembled from factory-formed components. Shelves span between supporting corner posts that allow shelf-height adjustment over full height of shelving unit. Provide fixed top and bottom shelves, adjustable intermediate shelves, and accessories indicated.
   1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
      a. Aurora Storage Products, Inc.
      b. Lyon Workspace Products, LLC.
      c. Spacesaver Corporation.
   2. Load-Carrying Capacity per Shelf: 200 lb, uniformly distributed.
   3. Posts: Fabricated from 1-inch-OD, round tubing of indicated material; with grooves or notches at 1-inch o.c. to receive shelf-to-post connectors. Label posts with numbers at not less than 2 inches o.c. for determining shelf height.
      a. Post Material: Steel.
      b. Post Base: Bolt leveler.
      c. Post Cap: Nylon or plastic.
      d. Unit Configuration: Configure shelving units as individual, freestanding assemblies.
   4. Truss-Type Wire Shelves: Manufacturer's standard, chrome-plated wire-over-wire construction, with downturned wire truss edges; with manufacturer's standard post collar, designed to engage collet (wedge), welded at each corner.

5. Shelf Quantity: Three shelves per shelving unit in addition to top and bottom shelf.
6. Shelf-to-Post Connectors: Manufacturer's standard one-piece collet (wedge), designed to engage post collar attached to shelves.
7. Bracing: Manufacturer's standard diagonal cross bracing, as required for stability, load-carrying capacity of shelves, and number of shelves.
8. Overall Unit Width: 36 inches and 48 inches, inclusive of two end posts, as indicated on the drawings.
9. Overall Unit Depth: 12 inches.
10. Overall Unit Height: 72 inches.
11. Accessories:
    a. Garment Hanger Tube: Width of shelves; with mounting brackets.
12. Steel Finish: Manufacturer's standard chrome plated.
    a. Color and Gloss: As selected by Architect from manufacturer's full range.

2.3 ANCHORS

A. Floor Anchors: Galvanized-steel, post-installed expansion anchors, power-actuated fasteners or threaded concrete screws. Provide number per unit recommended by manufacturer unless additional anchors are indicated in calculations.

B. Wall Anchors: Manufacturer's standard, galvanized-steel anchors designed to secure metal storage shelving to adjacent wall. Provide one per shelving unit for each shelving unit adjacent to a wall unless additional anchors are indicated in calculations.

2.4 FABRICATION

A. Fabricate metal storage shelving components to provide field-assembled units that are square and rigid, with posts plumb and true and shelves flat and free of dents or distortion. Fabricate connections to form a rigid structure, free of buckling and warping.
1. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
2. Build in straps, plates, brackets, and other reinforcements as needed to support shelf loading.
3. Cut, reinforce, drill, and tap metal fabrications to receive hardware, fasteners, and similar items.

B. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.

C. Form edges and corners free of sharp edges or rough areas. Fold back and crimp exposed edges of unsupported sheet metal to form a hem on the concealed side; ease edges of metal plate to radius of approximately 1/32 inch. Shear and punch metals cleanly and accurately. Remove burrs.

D. Weld corners and seams continuously to develop strength, minimize distortion, and maintain the corrosion resistance of base metals. At exposed locations, finish welds and surfaces smooth and blended so surface is smooth after finishing and contour of welded surface matches that of adjacent surface. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces before finishing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine floors for suitable conditions where metal storage shelving will be installed.

C. Examine walls to which metal storage shelving will be attached for properly located blocking, grounds, or other solid backing for attachment of support fasteners.

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

3.2 PREPARATION

A. Vacuum and clean finished floor over which metal storage shelving is to be installed.

3.3 INSTALLATION

A. Install metal storage shelving level, plumb, square, rigid, true, and with shelves flat and free of dents or distortion. Make connections to form a rigid structure, free of buckling and warping.
   1. Install exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
   2. Install braces, straps, plates, brackets, and other reinforcements as needed to support shelf loading and as required for stability.
   3. Anchor shelving units to floor with floor anchors through floor plate. Shim floor plate to achieve level and plumb installation.
   4. Connect side-to-side and back-to-back shelving units together.
   5. Install shelves in each shelving unit at equal spacing, unless indicated otherwise.
      a. Four-Post Metal Storage Shelving: Install four clips, one at each post, for support of each shelf; with clips fully engaged in post perforations.

B. Accessories:
   1. Garment Hanger Tubes: Install at locations indicated on Drawings.

3.4 ERECTION TOLERANCES

A. Erect four-post metal storage shelving to a maximum tolerance from vertical of 1/2 inch in up to 10 feet of height, not exceeding 1 inch for heights taller than 10 feet.

3.5 ADJUSTING

A. Adjust metal storage shelving so that connectors and other components engage accurately and securely.

B. Adjust and lubricate operable components to operate smoothly and easily, without binding or warping. Check and readjust operating hardware.

C. Touch up marred finishes or replace metal storage shelving that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal storage shelving manufacturer.

D. Replace metal storage shelving components that have been damaged beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 105613

SECTION 115313 - LABORATORY FUME HOODS

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. Bench-top laboratory fume hoods.
2. Piping and wiring within fume hoods for service fittings, light fixtures, fan switches, and other electrical devices included with fume hoods.
3. Fume hood base cabinets.
4. Fume hood base stands. (for students with disabilities)
5. Work tops within fume hoods.
6. Laboratory sinks and cup sinks in fume hoods.
7. Water, laboratory gas, and electrical service fittings in fume hoods.

B. Related Requirements:
1. Section 061053 “Miscellaneous Rough Carpentry” for wood blocking for anchoring fume hoods.
2. Section 092216 "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring fume hoods.
3. Section 096513 "Resilient Base and Accessories" for resilient base applied to fume hood base cabinets.
4. Section 123553.19 “Wood Laboratory Casework”
5. Division 22 Plumbing
6. Division 26 Electrical
7. Divison 23 HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC) for direct Digital Control (DDC) System for HVAC" for VAV controls for fume hood exhaust.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 COORDINATION

A. Coordinate layout and installation of framing and reinforcements for lateral support of fume hoods.

B. Coordinate installation of fume hoods with laboratory casework and other laboratory equipment.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For laboratory fume hoods.
1. Include plans, elevations, sections, and attachment details.

2. Indicate details for anchoring fume hoods to permanent building construction including locations of blocking and other supports.
3. Indicate locations and types of service fittings together with associated service supply connection required.
4. Indicate duct connections, electrical connections, and locations of access panels.
5. Include roughing-in information for mechanical, plumbing, and electrical connections.
6. Show adjacent walls, doors, windows, other building components, laboratory casework, and other laboratory equipment. Indicate clearances from the above items.
7. Include layout of fume hoods in relation to lighting fixtures and air-conditioning registers and grilles.
8. Include coordinated dimensions for laboratory equipment specified in other Sections.

C. Samples: For fume hood exterior finishes and interior lining.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Showing compliance with specified performance requirements for as-manufactured containment and static pressure loss, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency.

B. Source quality-control reports.

C. Field quality-control reports.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish complete touchup kit for each type and color of fume hood finish provided. Include fillers, primers, paints, and other materials necessary to perform permanent repairs to damaged fume hood finish.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or another suitable material.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install fume hoods until building is enclosed, wet work and utility roughing-in are complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

B. Locate concealed framing, blocking, and reinforcements that support fume hoods by field measurements before being enclosed, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Bypass Fume Hoods with Steel Exterior:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   a. Campbell Rhea.
   b. Diversified Woodcrafts, Inc.
   c. Leonard Peterson & Company, Inc.
   d. Sheldon Laboratory Systems.
   e. Kewaunee Scientific Corporation.

B. Source Limitations: Obtain laboratory fume hoods from single manufacturer.
   1. Obtain laboratory fume hoods from same source as laboratory casework.

C. Product Designations: Drawings indicate sizes, types, and configurations of fume hoods by referencing designated manufacturer's catalog numbers. Other manufacturers' fume hoods of similar sizes, types, and configurations, and complying with the Specifications, may be considered. See Section 016000 "Product Requirements."

2.2 PERFORMANCE REQUIREMENTS

A. Containment: Provide fume hoods that comply with the following when tested according to ASHRAE 110 as modified below:
   1. As-Manufactured (AM) Rating: AM 0.05 (0.05 ppm).
   2. As-Installed (AI) Rating: AI 0.05 (0.05 ppm).
   3. Average Face Velocity: 100 fpm plus or minus 10 percent with sashes fully open.
   4. Face-Velocity Variation: Not more than 20 percent of average face velocity across the face opening with sashes fully open.
   5. Sash Position: Fully open.
      a. Test hoods with horizontal sashes with maximum opening on one side, with maximum opening in the center, and with one opening at each side equal to half of maximum opening.
      b. Test hoods with combination sashes fully raised, with maximum opening on one side, with maximum opening in the center, and with one opening at each side equal to half of maximum opening.
   6. Release Rate: 4.0 L/min.
   7. Test Setup Modifications: Conduct tests with a minimum of three and a maximum of five people in the test room and with two 1-gal. round paint cans, one 12-by-12-by-12-inch cardboard box, and three 6-by-6-by-12-inch cardboard boxes in the fume hood during the test. Position items from 6 to 10 inches behind the sash, randomly distributed, and supported off the work surface by 2-by-2-inch blocks.
   8. Walk-by Test: At the conclusion of containment test, execute three rapid walk-bys at 30-second intervals, 12 inches behind the mannequin. Test-gas concentration during each walk-by shall not exceed 0.1 ppm and shall return to specified containment value within 15 seconds.

B. Static-Pressure Loss: Not more than 1/2-inch wg at 100-fpm face velocity with sash fully open when measured at four locations 90 degrees apart around the exhaust duct and at least three duct diameters downstream from duct collar.

2.3 FUME HOODS

A. Product Standards: Comply with SEFA 1, "Laboratory Fume Hoods - Recommended Practices." Provide fume hoods UL listed and labeled for compliance with UL 1805.

B. Bypass Fume Hoods: Provide bypass fume hoods. Compensating bypass above the sash opens as sash is closed. Provide sufficient bypass capacity so that face velocity with sash opening of 6 inches does not exceed 3 times the face velocity with sash fully open.

C. Auxiliary Air: Where indicated, equip fume hoods with auxiliary-air outlet for connection to a system that supplies air from an external source equal to 70 percent of the exhausted air volume. Auxiliary-air system introduces air directly above and immediately in front of hood face. Capture efficiency of hoods shall be 90 percent minimum.

2.4 MATERIALS

A. Steel Sheet: Cold-rolled, commercial steel (CS) sheet, complying with ASTM A 1008/A 1008M; matte finish; suitable for exposed applications.

B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, stretcher-leveled standard of flatness.
   1. For perchloric acid fume hoods, use Type 316L instead of Type 304.

C. Epoxy: Factory molded, modified epoxy-resin formulation with smooth, nonspecular finish.
   1. Physical Properties:
      a. Flexural Strength: Not less than 10,000 psi.
      b. Modulus of Elasticity: Not less than 2,000,000 psi.
      c. Hardness (Rockwell M): Not less than 100.
      d. Water Absorption (24 Hours): Not more than 0.02 percent.
      e. Heat Distortion Point: Not less than 260 deg F.
      f. Flame-Spread Index: 25 or less according to ASTM E 84.
   2. Chemical Resistance: As follows when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
      a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
      b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
   3. Color: Black.

D. Polypropylene: Unreinforced polypropylene complying with ASTM D 4101, Group 01, Class 1, Grade 2.

E. Glass: Clear, laminated tempered glass complying with ASTM C 1172, Kind LT, Condition A, Type I, Class I, Quality-Q3; with two plies not less than 3.0 mm thick and with clear, polyvinyl butyral interlayer.
   1. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201 for Category II materials.
   2. Permanently mark safety glass with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or the manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

F. 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.

G. Fasteners: Provide stainless-steel fasteners where exposed to fumes.

2.5 FABRICATION

A. General: Assemble fume hoods in factory to greatest extent possible. Disassemble fume hoods only as necessary for shipping and handling limitations. Fume hoods shall be capable of being partly disassembled as necessary to permit movement through a 35-by-79-inch door opening.

B. Steel Exterior: Fabricate from steel sheet, 0.048 inch thick, with component parts screwed together to allow removal of end panels, front fascia, and airfoil and to allow access to plumbing

lines and service fittings. Apply chemical-resistant finish to interior and exterior surfaces of component parts before assembly.

C. Ends: Fabricate with double-wall end panels without projecting corner posts or other obstructions to interfere with smooth, even airflow. Close area between double walls at front of fume hood and as needed to house sash counterbalance weights, utility lines, and remote-control valves.

D. Splay top and sides of face opening to provide an aerodynamic shape to ensure smooth, even flow of air into fume hood.

E. Interior Lining: Provide one of the following unless otherwise indicated:
1. Glass-fiber-reinforced polyester, not less than 3/16 inch thick.
2. Epoxy, not less than 1/4 inch thick.
3. Glass-fiber-reinforced epoxy, not less than 3/16 inch thick.

F. Lining Assembly: Unless otherwise indicated, assemble with stainless-steel fasteners or epoxy adhesive, concealed where possible. Seal joints by filling with chemical-resistant sealant during assembly.
1. Fasten lining components together with steel cleats or angles to form a rigid assembly to which exterior panels are attached.
2. Punch fume hood lining side panels to receive service fittings and remote controls. Provide removable plug buttons for holes not used for indicated fittings.

G. Rear Baffle: Unless otherwise indicated, provide baffle, of same material as fume hood lining, at rear of hood with openings at top and bottom. Secure baffle to cleats at rear of hood with stainless-steel screws. Fabricate baffle for easy removal for cleaning behind baffle.
1. Provide preset baffles unless otherwise indicated.
2. Provide epoxy-coated, stainless-steel screen at bottom baffle opening to prevent paper from being drawn into the exhaust plenum behind baffles.

H. Exhaust Plenum: Full width of fume hood and with adequate volume to provide uniform airflow from hood, of same material as hood lining, and with duct stub for exhaust connection.
1. Duct-Stub Material: Epoxy-coated steel, unless otherwise indicated.

I. Bypass Grilles: Provide grilles at bypass openings of fume hoods.

J. Sashes: Provide operable sashes of type indicated.
1. Glaze with laminated safety glass.
2. Counterbalance vertical-sliding sash with sash weight and stainless-steel cable system to hold sash in place regardless of position. Provide ball-bearing sheaves, plastic glides in stainless-steel guides, and stainless-steel lift handles. Provide rubber bumpers at top and bottom of each sash unit.

K. Airfoil: Unless otherwise indicated, provide airfoil at bottom of fume hood face opening with 1-inch space between airfoil and work top. Sash closes on top of airfoil, leaving 1-inch opening for air intake. Airfoil directs airflow across work top to remove heavier-than-air gases and to prevent reverse airflow.
1. Fabricate airfoil from stainless steel.

L. Light Fixtures: Provide vaporproof, two-tube, rapid-start, fluorescent light fixtures, of longest practicable length; complete with tubes at each fume hood. Shield tubes from hood interior with 1/4-inch-thick laminated glass or 3-mm-thick tempered glass, sealed into hood with chemical-resistant rubber gaskets. Provide units with fluorescent tubes easily replaceable from outside of fume hood.
1. Provide fluorescent tubes with color temperature of 3500 K and minimum color-rendering index of 85.

M. Filler Strips: Provide as needed to close spaces between fume hood base cabinets and adjacent building construction. Fabricate from same material and with same finish as fume hoods or fume hood base cabinets, as applicable.

N. Ceiling Extensions: Provide filler panels matching fume hood exterior to enclose space above fume hoods at front and sides of fume hoods and extending from tops of fume hoods to ceiling

O. Comply with requirements in other Sections for installing water and laboratory gas service fittings, piping, electrical devices, and wiring. Install according to Shop Drawings. Securely anchor fittings, piping, and conduit to fume hoods unless otherwise indicated.

2.6 FUME HOOD BASE CABINETS

A. In compliance with Section 123553.19 "Wood Laboratory Casework."

B. Work Tops: Epoxy.
1. Work-Top Configuration: Raised (marine) edge with beveled edge and corners.
2. Where epoxy sinks occur in epoxy work tops, provide integral sinks bonded to tops with invisible joint line.

C. Cup Sinks: Epoxy, 3-by-6-inch oval.
1. Provide with stainless-steel strainers and integral tailpieces.
2. Provide integral tailpieces.

D. Fume Hood Base Stands: Finished end panel and removable front panel to match adjacent laboratory casework.
1. Structural Performance: Capable of withstanding 50-lb/ft. work top, 75 lb/ft. on work top, plus weight of hood, without permanent deformation or excessive deflection.
2. Knee Space: Provide clear floor space not less than 30 inches wide by 25 inches deep by 27 inches high within fume hood base stands unless otherwise indicated.

2.7 CHEMICAL-RESISTANT FINISH

A. General: Prepare, treat, and finish welded assemblies after welding. Prepare, treat, and finish components that are to be assembled with mechanical fasteners before assembling. Prepare, treat, and finish concealed surfaces same as exposed surfaces.

B. Preparation: Clean steel surfaces, other than stainless steel, of mill scale, rust, oil, and other contaminants. After cleaning, apply a conversion coating suited to the organic coating to be applied over it.

C. Chemical-Resistant Finish: Immediately after cleaning and pretreating, apply fume hood manufacturer's standard two-coat, chemical-resistant, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.
1. Chemical and Physical Resistance of Finish System: Finish complies with acceptance levels of cabinet surface finish tests in SEFA 8M. Acceptance level for chemical spot test shall be no more than four Level 3 conditions.
2. Colors for Fume Hood Finish: As selected by Architect from manufacturer's full range.

2.8 ACCESSORIES

A. Airflow Indicator and Alarm: Provide each fume hood with manufacturer's standard airflow indicator with audible and visual alarm that activates when airflow sensor reading is outside of preset range.

B. Airflow Indicator: Provide each fume hood with airflow indicator of one of the following type(s):
   1. Indicator Type: Direct-reading aneroid (Magnehelic-type) gage that measures exhaust duct static pressure of fume hood as an indication of airflow.
   2. Indicator Type: Thermal anemometer that measures fume hood face velocity and indicates whether it is below normal, normal, or above normal.
   3. Indicator Type: Thermal anemometer that measures fume hood face velocity and displays data as digital readout.

C. Airflow Alarm: Provide fume hoods with audible and visual alarm that activates when airflow sensor reading is outside of preset range.
   1. Provide with thermal-anemometer or aneroid (Magnehelic-type) gage airflow sensor.
   2. Provide with reset and test switches.
   3. Provide with switch that silences audible alarm and automatically resets when airflow returns to within preset range.

D. Sash Alarm: Provide fume hoods with audible and visual alarm that activates when sash is opened beyond preset position.
   1. Provide with silence and test switches.

E. Sash Stops: Provide fume hoods with sash stops to limit hood opening to 50 percent of sash height. Sash stops can be manually released to open sash fully for cleaning fume hood and for placing large apparatus within fume hood.

F. Bypass Grille Blank-off Panel: Provide fume hoods with blank-off panel on bypass grille designed for use with sash stops to reduce exhaust air volume and provide design face velocity with sash at 50 percent open position.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fume hoods.

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

3.2 INSTALLATION

A. General: Install fume hoods according to manufacturer's written instructions. Install level, plumb, and true; shim as required, using concealed shims, and securely anchor to building and adjacent laboratory casework. Securely attach access panels but provide for easy removal and secure reattachment. Where fume hoods abut other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

B. Comply with requirements in Section 123553.19 "Wood Laboratory Casework" for installing fume hood base cabinets, work tops, and sinks.

3.3 FIELD QUALITY CONTROL

A. Field test installed fume hoods according to "Flow Visualization and Velocity Procedure" requirements in ASHRAE 110.
   1. Test one installed fume hood, selected by Architect, for each type of hood installed, according to ASHRAE 110. If tested hood fails to meet performance requirements, field test additional hoods as directed by Architect.

3.4 ADJUSTING AND CLEANING

A. Adjust moving parts for smooth, near silent, accurate sash operation with one hand. Adjust sashes for uniform contact of rubber bumpers. Verify that counterbalances operate without interference.

B. Clean finished surfaces, including both sides of glass; touch up as required; and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

3.5 FUME HOOD SCHEDULE

A. Bench-Top Fume Hood Type:
   1. Exterior: Steel with chemical-resistant finish.
   2. Ventilation Type: Bypass.
   3. ASHRAE 110 As-Manufactured (AM) Rating: AM 0.05 (0.05 ppm).
   4. ASHRAE 110 As-Installed (AI) Rating: AI 0.05 (0.05 ppm).
   5. Sash Configuration:
      a. Operation: Vertical-sliding, single-hung sash.
      b. Opening Height: 27 to 30 inches.
   6. Work Top: Epoxy.
   7. Cup Sinks: Epoxy, 3-by-6-inch oval.
   8. Service Fittings:
      a. Hot and Cold Water: One remote-control, rigid, gooseneck, single-service faucet(s) with vacuum breaker and removable serrated outlet.
      b. Laboratory Gas for Gas (Fuel Gas): One flange-type fitting(s) with angled outlet and remote-control ground-key cock.
      c. Electrical: One duplex receptacle at both end(s) of hood, mounted on exterior front face of end pilaster.
         1) Provide GFCI receptacles.

END OF SECTION 115313

SECTION 116143 - STAGE CURTAINS

PART 1 - GENERAL

1.1 SUMMARY

A. This specification describes the manufacture and installation of stage curtains in the Dining Room.

1.2 RELATED DOCUMENTS

A. Theatre Rigging Systems Drawings ("TR" Series) and general provisions of the contract including general and supplementary conditions and Division 1 Specification sections apply to this section.

1.3 SECTION INCLUDES

A. Project instructions for the Contractor and System description details.

B. System product descriptions.

C. Project completion instructions for the Contractor.

1.4 RESPONSIBILITY AND RELATED WORK

A. Coordination, supply, installation, shipping, storage, inspection, commissioning, testing, instruction and warranties of the Stage Curtains.

B. Plant, materials, equipment, transport and labor necessary to accomplish this and have a complete and fully functioning System.

C. Also includes:
1. Required licenses and permits including payment of charges and fees.
2. Verification of dimensions and conditions at the job site.
3. Provision of submissions.
4. Installation in accordance with the Contract Documents, Manufacturer's recommendation, and in conformity with applicable codes and authority having jurisdiction.
5. Extension of electrical service, including ground, to equipment locations.

D. The drawings included with this specification convey general system concepts. Where the plans do not show complete and accurate building details, the Contractor is responsible for making field measurements necessary to establish exact locations, relationships, and load capacities necessary for the installation of these systems.

E. Coordinate the work with the related documents and the scheduled work of other trades.

F. Supply accessories and minor equipment items needed for a complete and fully operational system, even if not specifically mentioned in these Specifications or on the associated Drawings, without claim for additional payment.

G. Notify the Architect of any discrepancies in part numbers or quantities before bid. Failing to provide such notification requires the Contractor to supply items and quantities

according to the intent of the Specifications and associated Drawings without claim for additional payment.

H. Specifications and drawings are complementary. Work called for by one is binding as if called for by both. Any discrepancies between specifications and drawings shall be brought to the attention of the Architect for clarification during the bidding period. No allowance shall subsequently be made to the Contractor by reason of their failure to have brought said discrepancies to the attention of the Architect.

I. Execute all work in accordance with all Standard Authorities listed above, and all applicable State and Local codes, ordinances, and regulations.

J. If a conflict develops between the Contract Documents and the appropriate codes and is reported to the Architect prior to bid opening, the Architect will prepare the necessary clarification. Where a conflict is reported after contract award, propose a resolution of the conflict and, upon approval, perform work.

K. Flame proofing and Documentation of Drapery Fabrics:
1. Provide inherently flame retardant or chemically flame proofed curtains. Chemical flame proofing formula and process must adhere to Bureau of Standards U.S. Department of Commerce. Once fabric is processed, it will pass such tests as are required by the Fire Marshall of the local fire department, the Owner, and any other authority having jurisdiction.
2. A certificate for each drape is required to be provided to the Owner. This certificate clearly indicates: the name of the Stage Drapery (sub) Supplier, the name and color of the fabric, the name of the Company providing flame proofing treatment, date of the treatment, the date of re-treatment required, the name of the chemical and method used, the signature of an officer or approved representative of the Company providing flame proofing treatment, and the signature of an officer of the company installing the curtains. Official seal(s) and signature(s) of a notary public is required for the both signatures.
3. Labels clearly indicating date of manufacture, cloth type, manufacturer's name and address, size (width and height using 3/4" minimum lettering), and Owner's designated inventory number (to be coordinated with Owner) will be sewn into the back (in most cases, upstage) side of the upper hem at both ends of each drape panel.

1.5 REFERENCES

A. Published specification standards, tests or recommended methods of trade, industry or governmental organizations apply to Work in this section where cited below:
1. National Fire Protection Association (NFPA)
2. American National Standards Institute (ANSI)
3. American Society of Testing and Materials (ASTM)
4. Occupational Safety and Health Administration (OSHA)
5. Underwriters Laboratories (UL)
6. Entertainment Services and Technology Association (ESTA)
7. Entertainment Technicians Certification Program (ETCP)

1.6 DESCRIPTIONS AND REQUIREMENTS

A. Dining Room:

1. Stage

a. Drapery for the stage platform shall consist of a main curtain, masking legs and borders, a mid-stage act curtain, an upstage blackout curtain, a cyclorama, and side masking tabs as described on the drawings.
b. Drapery and associated hardware shall mount on lineset battens as scheduled.
    1) The main curtain, downstage traveler, mid-stage traveler, and blackout curtain, each consisting of two (2) matched fabric panels, will part at their centers and draw open on a traveler track. The main curtain shall fully clear the proscenium when opened.
    2) The side tabs shall be track mounted; operation will be by hand using walk-along track hardware.
    3) Masking legs will hang from walk-along track carriers as indicated in drawings. One (1) spare set shall have ties to tie directly to a utility batten.
    4) Borders/ Valance, skrim, and the cyclorama will tie directly to lineset battens.
c. Storage hampers shall be provided for storage of spare drapery.

B. Accessories
1. Provide wheeled hampers with lids for storage of spare/loose curtains.

C. General Requirements
1. It is the responsibility of the stage curtain provider to ensure the proper size and fit of the drapery within the facility.
2. All drapery shall be sized and verified based on field measurements prior to fabrication.

1.7 QUALITY ASSURANCE

A. Contractor's Qualifications: Firm experienced in the provision of systems similar in complexity to those required for this project; and meet the following:
1. No less than five (5) years of experience with equipment and systems of the specified types.
2. Experience with at least five (5) comparable scale projects within the last two (2) years.
3. Employ only fully trained stage riggers and mechanics for the erection of the stage equipment.
4. An ETCP certified theatre rigger shall supervise all rigging installation.
5. The stage riggers will be completely familiar with the type of equipment to be installed. A competent and knowledgeable Job Superintendent will be on the job at al times when Work is in progress.
6. Maintain a fully staffed and equipped service facility.
7. At the request of the Architect, demonstrate that:
    a. Adequate plant and equipment is available to complete the work.
    b. Adequate staff with commensurate technical experience is available.

1.8 SUBMITTALS:

A. Provide submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures section unless otherwise indicated.

B. The submittal information required by the specification is to be presented complete and as submissions noted below. Submittals are a crucial and integral part of the construction

process; as such the Owner's consultant will not recommend payment to the Contractor above 25% of the scheduled value of this work until all submittal information has been approved. Cost for the Owner's consultant to review secondary and re-submittals due to the Contractor's failure to include all required submittal information, or rejection of incomplete or improperly prepared submittal information will be the responsibility of the Contractor. The cost shall be based on the hourly rates of the Architect and his Consultants as published in their current professional fees schedules and shall also include reimbursable costs for delivery, mailing, and photocopies at direct cost plus ten percent (10%).

C. Submittals must be original work produced by the firm responsible for performing the work defined in this specification. Scanning, photographic copying, materially copying, or any other reproducing the contents of the drawings or specifications contained within the Contract Documents will be marked as unacceptable and not reviewed for any content. No claim shall be made for delay, undue burden, or additional costs for the effort to produce shop drawings, schedules, and equipment lists addressing this specification or the overall project manual.

D. Project Submittal Part 1:
1. Provide for approval not later than thirty (30) days after issuance of Notice to Proceed and prior to commencement of Work:
   a. Section 1: A complete schedule of submittals.
   b. Section 2: A chronological schedule of Work in bar chart form. Revise and resubmit schedule as required to reflect construction progress.

E. Project Submittal Part 2
1. Provide for approval no later than sixty (60) days after issuance of Notice to Proceed and in accordance with previously provided submittal schedule.
2. Products:
   a. Section 1: Complete list of products to be incorporated within the Work (Bill of Materials).
   b. Section 2: Manufacturer’s data sheets for each product.
      1) Provide original Manufacturer’s data sheets in order as they appear in this specification.
      2) Data sheets are required for each product in sufficient detail to evaluate product suitability for incorporation within the Work.
      3) Product literature shall include documentation of UL listing or approved recognition by a Nationally Recognized Testing Laboratory (NRTL).
   c. Section 3: Fabric Samples
      1) Submit a sample book of each fabric specified, containing manufacturer’s standard colors available in the quality of fabric specified for the Owner’s selection and approval of color. More than one color may be selected. After selection, upon request, submit one square foot sample of each fabric in each color for final review.
   d. Section 4: Submit Safety Data Sheets (SDS) for each potentially hazardous material prior to use. Include information pertaining to the hazardous material with the SDS.
3. Drawings:
   a. Provide computer software generated drawings using standard industry graphic standards. Hand or poorly drawn documents will not be accepted. All drawings shall be created on a computer aided drafting (CAD) system. Electronic files of theatrical lighting contract documents shall not be distributed for use in generating submittal documents with the exception of Architectural backgrounds.
   b. Equipment Drawings:
      1) Provide complete assembly details of drapes including stitching schematics, weights, attachment details, and fabric/drape schedule.

c. Installation Drawings.
   1) Provide detail drawings depicting any unique installation methods specific to each product.
4. Any other pertinent data generated which is necessary to provide the Work.

F. Submittal Format:
1. Electronic (PDF) submittal documents are required for review.
2. Provide each submittal with a unique number and each shall be numbered in consecutive order.
3. Submittals shall not be issued with other disciplines.
4. Provide each submittal with a complete table of contents with the following information:
   a. Project Name
   b. Submittal number. In the case of a resubmittal, use the original submittal number immediately followed by the suffix “R” immediately followed by a unique number and shall be numbered in consecutive order.
   c. Date of submission.
   d. Referenced specification Section, Part, Article, Paragraph, and page number or drawing reference as applicable.
5. Follow list by Manufacturer’s data sheets, arranged as in Part 2 of this specification. If a data sheet shows more than one product, indicate the model being proposed with an arrow or other appropriate symbol.
6. Drawings executed at an appropriate scale, but not smaller than 1/8" = 1'-0” for conduit/floor plans, 1/4" = 1’-0” for equipment layouts, and 1/2" = 1’-0” for mounting details and panel details.

G. Resubmission Requirements:
1. Make any requested corrections or change in submittals required. Resubmit for review as directed.
2. Indicate any changes that have been made other than those requested.

H. Approval of Submittals: Each submittal package will be returned with one of the following stamps:
1. “No Exceptions Taken” proceed with construction; all job site coordination will be at the direction of the General Contractor.
2. “Make Corrections Noted: No Resubmission Required” submittals have been returned with conditional approval. Corrections, as indicated on the returned drawings and/or specifications, must be made before construction can begin.
3. “Make Corrections Noted: Submit Only Corrected Pages/Items” submittals have been returned with conditional approval. Corrections, as indicated on the returned drawings and/or specifications, must be made in writing and returned to the consultant before construction can begin.
4. “REJECTED, Submit Specified Item” a specified item in the submittal has been rejected for the reasons noted. Re-submit in compliance with the specifications.
5. “REJECTED, Revise and Re-submit” submittal has been rejected for the reasons noted. Re-submit in compliance with the specifications.
6. “No Review Action Required” all information provided was for information or coordination purposes only. Review is not required.

1.9 PROJECT RECORD MANUAL

A. Provide electronic copies of the project record documents or as required per the General Conditions of the Project.

B. The Project Record Manual shall be segregated into three separate bindings as follows:
1. As-Built Record Documents:

a. Product Data:
   1) List of all products incorporated in the Project inclusive of all substitutions, field changes, or revisions The list shall include Manufacturer's serial numbers.
   2) Manufacturer's data for each type of product conforming to the scheme above.
   3) Organize and bind the above in specification order.

b. Record drawings: Final rendition of project drawings enumerated in the Submittal section above. Provide editable computer software generated drawings using standard industry graphic standards. Hand or poorly drawn documents will not be accepted. All drawings shall be created on a computer aided drafting (CAD) system, in both a DWG and PDF file format.

c. Test Reports: Record findings of systems testing described in Part 3 below.

2. Operations Manual
   a. System Operation and Instructions: Prepare a complete and typical procedure for the operation of the equipment as a system, organized by subsystem or activity.
      1) This procedure should describe the operation of all system capabilities.
      2) Assume the intended reader of the manual to be technically experienced but unfamiliar with the components and the facility.
3. Service & Maintenance Manual:
   a. Provide an original copy of the service manual on every piece of equipment for which the Manufacturer offers a service manual. Arrange manuals in the same order as the operations manual.
   b. Manufacturer's maintenance and care instructions.
   c. Maintenance Instructions: include maintenance phone number(s) and hours, maintenance schedule, description of products recommended or provided for maintenance purposes, and instructions for the proper use of these products.
4. Warranty Manual:
   a. Manufacturer's warranty statements on each product.
   b. Date of substantial completion and ending dates for warranties for each group of products.
   c. Software registration and licenses.
5. Drapery Flame proofing Documentation:
   a. Provide all certificates, test reports, and documentation required for drapery flame proofing.
6. Include any other pertinent data generated during the Project or required for future service.
7. Appropriately duplicate data within the separate bindings when it will reasonably clarify procedures, e.g., operational data in maintenance binding.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Products shall ship and be stored in their original container to prevent damaging or entrance of foreign matter until installation.

B. Provide protective covering during construction to prevent damaging or entrance of foreign matter.

C. Replace, at no expense to the Owner, product damaged during storage, handling, or the course of construction.

1.11 PROJECT CONDITIONS

A. Verify conditions on the job site applicable to this work. Notify Architect in writing of discrepancies, conflicts, or omissions promptly upon discovery.

B. The Drawings diagrammatically show arrangements of equipment fitting the space available without interference. If conditions exist which make it impossible to install work as shown, recommend solutions and/or submit drawings to the Architect for approval, showing how the work may be installed.

1.12 FINAL TESTING AND OBSERVATION

A. Upon completion of installation and initial tests and adjustments, described in Part 3, acceptance testing shall be performed by the Consultant.

B. The process of acceptance testing the System may necessitate moving and adjusting certain component parts, such as counterweights on arbors, adjustment of drapery tracks, etc. Perform such adjustments without claim for additional payment.

1.13 WARRANTY

A. Warrant labor and product for two (2) years following the date of substantial completion to be free of defects and deficiencies and to conform to the drawings and specifications as to kind, quality, function, and characteristics. Repair or replace defects occurring in labor or product within the Warranty period without charge. Any cost associated with this warranty repair is the responsibility of the Contractor.

B. This warranty is in addition to any specific warranties issued by Manufacturers for greater periods of time.

C. Within the warranty period, answer service calls within twenty-four (24) hours during normal working hours and correct the deficiency within forty-eight (48) hours.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURES

A. Model numbers and manufacturers included in this specification are listed to establish a standard of function, performance, and quality.

B. Refer to General and Supplementary Conditions and Division 1 Specification Sections for equipment substitution procedure.

C. Providing product not specifically specified without prior written approval by the Owner, Architect and/or Architect’s Consultant shall not be accepted.

2.2 GENERAL

A. Products shall be new, free from defects and listed by an NRTL when an applicable NRTL Standard exists. Provide product of a given type from one manufacturer.

B. Regardless of the length or completeness of the descriptions below, provide product that meets or exceeds the specified product’s published functionality.

2.3 CONTACTS

A. Listed below is contact information for Manufacturers of rigging components approved to provide equipment on this project:

1. K&M Fabrics
   a. 2 Waco Street, Greenville, South Carolina 29611
   b. Telephone: (800) 845-1896
   c. Approved to supply curtain fabric.
2. J.B. Martin
   a. 445 rue St-Jean-sur-Richelieu, Quebec, Canada J3B 2M1
   b. Telephone: (514) 346-6853
   c. Approved to supply curtain fabric
3. Rose Brand Fabrics
   a. 4 Emerson Lane, Secaucus, NJ 07094
   b. Telephone: (800) 223-1624
   c. Approved to supply drapery, hampers, and miscellaneous associated equipment.
4. Liba Fabrics Corp.
   a. 132 W 36th St. 6th Floor, New York, NY 10018
   b. Telephone: (212) 563-4991
   c. Approved to supply curtain fabrics

2.4 STAGE DRAPERY STAGE DRAPERY

A. General Specification for Stage Drapery
   1. Provide and install all curtains as located and scheduled on the drawings.
   2. Field verify all dimensions prior to fabrication of curtains.
   3. Curtain fabric of professional grade fabric intended for stage use. If not inherently flame retardant, curtain fabric shall be chemically flame proofed at the mill using an immersion process. Flame proofing certificates for all fabrics used shall be furnished to the owner with the as-built drawings.
   4. Sew tags identifying manufacturer and size of panel at each end of webbing at top and at one corner at hem in each drape.
   5. Curtains must be constructed with vertical seams unless otherwise specified. The fabric grain shall run nap down and match in all panels. All panels must be un-spliced along their height.
   6. Construction
      a. Black Poly webbing at 4” wide shall be double stitched to the top of the curtain with 1” of face fabric turned under the webbing.
      b. Brass rustproof grommets shall be inserted
         1) at the extreme top corners
         2) in the pleat centers of curtains sewn with fullness, or
         3) on 12” centers for flat curtains.
      c. Grommet holes for track mounted curtains shall be supplied with
         1) plated wire “S” hooks, or
         2) snap hooks, sewn-in at the spacing noted above.
      d. Drapery hung directly from an auxiliary batten shall have a 24” long black cotton tie line fastened in each grommet hole.
      e. The centerline of the drape shall be marked on the top webbing with “CL” and a white tie line added to the corresponding grommet.
      f. Curtains sewn with fullness shall have box pleats spaced 12” on center.
      g. Bottom hems shall be 4” wide. These shall be sewn with a separate canvas chain pocket inside so that the bottom of the canvas pocket rides 2 inches above bottom of the hem. Provide #8 plated jack chain in the pocket.
      h. All traveling curtains shall be sewn with a minimum 24” of face fabric turned back at the leading edge. All other vertical hems shall be 2”.
   7. Use mercerized cotton thread, minimum weight of #16, color to match drape fabric.
   8. Fabric colors shall be as scheduled. Submit color sample card with submittal documents. Make all effort to ensure that curtains of the same color are fabricated from fabrics of the same dye lot.

9. Labeling
   a. Sew labels onto the back (in most cases, upstage) side of the upper hem at both ends of each panel.
   b. Labels shall clearly indicate
      1) date of manufacture
      2) cloth type
      3) manufacturer's name and address
      4) size (width and height using 3/4" minimum lettering
      5) owner's designated inventory number
10. Acceptable product:
   a. For nominal 24-25 ounce fabric
      1) KM Fabrics Charisma inherently flameproof velour.
   b. For nominal 20-21 ounce fabric
      1) KM Fabrics Crescent inherently flameproof velour
   c. For Cyclorama
      1) Rose Brand FR heavy-weight seamless muslin,
   d. For Scrim
      1) Rose Brand FR Sharkstooth scrim

2.5 MISCELLANEOUS EQUIPMENT

A. Cloth Hampers:
   1. Provide two (2) castered cloth hampers for storage and transport of loose curtains.
   2. Hampers shall be made from heavyweight canvas with hinged wooden tops, reinforced bottoms and 4” heavy duty swivel casters.
   3. Provide hamper tops with caster donuts to allow stacking of hampers.
   4. Acceptable Product:
      1) Rose Brand 20 Bushel Hamper

2.6 COMPLETED SYSTEM

A. General
   1. All installation of stage rigging equipment shall be completed utilizing new materials, free from flaws and rust, and in good working order. The jobsite shall be cleaned of all packing materials, lubricants, metal shaving, miscellaneous hardware, and components not used in the installation.
   2. All dimensions are to be field verified. Location and attachment of hardware and size of components shall be confirmed by the Contractor.
   3. All electrical power, outlets, related systems, and structural elements required to make the system fully functional re the responsibility of the Contractor.
   4. If components and hardware are not specifically specified or called out, it is the responsibility of the Contractor to provide those components in order to provide a fully operational theatrical rigging system.

B. Trimming/Leveling of Drapery
   1. Contractor is to return to the jobsite within sixty (60) days, but not less than thirty (30) days of the installation to re-trim all tracks and curtains.
   2. Provide documented notes on site visit to Architect and Architect’s Consultants on adjustments made during return visit.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate incorporation of the Work specified herein with other project work so as to facilitate a cohesive final product.

B. Mount equipment and enclosures plumb and level.

C. Permanently installed equipment to be firmly and safely held in place in accordance with specified safety factors and Federal and State codes and regulations.

D. Work should be completed within industry guidelines, including ESTA, OSHA, ANSI, ASTM, NFPA, plus any or all local, governmental, or other applicable codes.

E. Where dimensions and loading capacities have been omitted from this specification, they are to be determined by the Contractor, in accordance with the accepted industry standards and guidelines in this section. In no way will the Contractor be relieved of primary responsibility to provide a safe, fully functional system.

F. The mechanical fabrication and workmanship will incorporate the best practices for good fit and finish. There will not be any burrs or sharp edges to cause a hazard nor will there be any sharp corners accessible to personnel.

G. All equipment will be installed based on the manufacturer's recommendations and for the use intended by the manufacturer.

H. All finishes which are disturbed during shipping and installation will be touched up to match the original.

3.2 INSTALLATION OF STAGE CURTAINS AND TRACK HARDWARE

A. Install all track mounted curtains to hardware according to track manufacturer’s recommendations.

B. Stage curtains shall be installed near the end of the installation when chances of damage from other work are reduced. Stage area shall be broom clean with no further construction taking place prior to installation.

C. After hanging stage curtains, thoroughly brush to remove dust, visible dirt, loose threads, loose fabric lint, etc. Wrinkles will be allowed to fall out naturally.

D. Verify that each drapery panel bears a label as described in paragraph 2.4., A, 9 above.

3.3 FINAL OBSERVATION & TESTING

A. Upon completion of installation, initial adjustments, tests and measurements specified in Part 3, and submission and review of the results, a final inspection and test will be observed by the Consultant.

B. Contractor will assist in this testing and provide all test equipment noted below.
1. Contractor shall provide at least one (1) person for inspection and two (2) persons for testing familiar with aspects of the System to assist the Consultant.
2. Contractor personnel shall be made available for the entire testing period (day and night), to assist in tests, adjustments, and final modifications.
3. Testing process is estimated to take a minimum of one (1) day.

C. Testing will include operation of each major system and any other components deemed necessary.

D. The following procedures will be performed on each System:
1. Inspection of the means and methods employed to incorporate the System within the facility.
2. Verification of proper operation, from controlling devices to controlled devices.
3. Verifation of proper adjustment, balance, and alignment of equipment for optimum quality and to meet the Manufacturer's published specifications. Establish and mark normal settings for each setting, and appropriately record these settings within the Record Documents.
4. Other tests on equipment or systems deemed appropriate.

E. The Consultant will provide the Owner with a listing describing any incomplete or otherwise deficient items determined as part of the testing process. Where further adjustment or work becomes evident during testing, the Contractor is to continue work until the System is complete.

F. Stage drapery installer shall return to the jobsite six months after acceptance to:
1. Inspect curtains and attachments
2. Re-trim all curtains.

3.4 INSTRUCTION OF OWNER PERSONNEL

A. Provide operations and service training on all equipment incorporated in the System.

B. Training shall not be conducted until final observation and testing is completed by the Consultant, unless otherwise directed by the Owner.

C. Provide (3) hour of training. Training shall be conducted in accordance with Owner's schedule.

D. In the event that a portion of the training time is occupied in troubleshooting the equipment installation, then the training time shall be extended an equal amount of time.

E. Submit an outline of the course with sample instructional aides for approval thirty (30) days prior to scheduled instruction sessions to architect and architect's consultant.

F. Following discussions with Owner, provide a Training submittal 2-4 weeks prior to first training. Submittal shall:
1. Indicate date, time, and approximate length of training session.
2. Indicate person(s) conducting training.
3. Indicate whether training will be video recorded.
4. Intended curriculum and most appropriate attendees (e.g., technician, operations, IT, etc.)
5. Include signature and title lines for:
   a. Owner acknowledging and accepting training schedule. Include both an Accepted and Rejected box. An alternate schedule time should be suggested by the Owner in the event the schedule is rejected.
   b. Countersigning by trainer indicating that training actually occurred.
   c. All persons attending training. Where attendees do not stay for the entire session, this should be noted on the form and initialed by Owner's representative attending training.
   d. Owner's representative attending training at the end of the session shall initial that:
      1) Training Occurred.
      2) Training Materials were provided and left with Owner
      3) Training was not interrupted or shortened by equipment or system troubleshooting. If it is, then there should be a line where Owner and

Contractor can indicate when make-up training will be provided and how long it should be.

4) Training was generally sufficient for the proposed curriculum.

6. Include Notes section for Owner and Contractor to note any issues during training (areas requiring further development, etc.)

G. If a representative of the Manufacturer is used in the instructional course, the Contract must be present throughout the extent of the course and ensure that the representative abides by the requirements set forth in these specifications.

H. Following training occurrence, submit completed training records no later than 5 days following end of training.

END OF SECTION 116143

SECTION 123213 - MANUFACTURED WOOD-VENEER-FACED CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wood-veneer-faced casework (teachers wall storage and bookshelf at smart boards).
2. Hardware and accessories.

B. Related Requirements:
1. Section 061053 “Miscellaneous Rough Carpentry” for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.
2. Section 088300 “Mirrors” for mirrors installed in teachers wall storage.
3. Section 123623.13 “Plastic-Laminate-Clad Countertops”
4. Section 123661.19 “Quartz Agglomerate Countertops”

1.2 DEFINITIONS

A. Definitions in the AWI/AWMAC/WI's "Architectural Woodwork Standards" apply to the Work of this Section.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

B. Keying Conference: Conduct conference at Project site. Incorporate keying conference decisions into final keying requirements.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For wood-veneer-faced casework.

1. Include plans, elevations, sections, and attachments to other work including blocking and reinforcements required for installation.
2. Indicate types and sizes of casework.
3. Indicate manufacturer's catalog numbers for casework.
4. Show fabrication details, including types and locations of hardware.
5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and equipment.
6. Apply AWI's Quality Certification Program label to Shop Drawings.

C. Keying Schedule: Include schematic keying diagram, and index each key set to unique designations that are coordinated with the Contract Documents.

D. Samples: For casework and hardware finishes.

E. Samples for Initial Selection: For casework and hardware finishes.

F. Samples for Verification: For the following:

1. Casework Finishes: 8-by-10-inch Samples for each type and color of finish.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For casework manufacturer and Installer.

B. Sample Warranty: For special warranty.

C. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Quality Standard Compliance Certificates: AWI's Quality Certification Program certificates.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish complete touchup kit for each casework finish provided. Include fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

1.9 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during remainder of construction period. Maintain temperature and relative humidity during remainder of construction period in range recommended for Project location by the AWI/AWMAC/WI's "Architectural Woodwork Standards."

B. Field Measurements: Where casework is indicated to fit to existing construction, verify dimensions of existing construction by field measurements before fabrication and indicate measurements on Shop Drawings. Provide fillers and scribes to allow for trimming and fitting.

C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before enclosing them, and indicate measurements on Shop Drawings.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of components or other failures of glue bond.
b. Warping of components.
c. Failure of operating hardware.
d. Deterioration of finishes.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR CASEWORK

A. Quality Standard: Unless otherwise indicated, comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Custom
2. Provide labels and certificates from AWI certification program indicating that casework complies with requirements of grades specified.

2.2 WOOD-VENEER-FACED CASEWORK (TEACHERS WALL STORAGE AND BOOKSHELF AT SMART BOARDS).

A. Source Limitations: Engage a qualified woodworking firm to assume responsibility for production of architectural cabinets with sequence-matched wood veneers.

B. Products (Basis of Design): As indicated on Drawings.

C. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
1. Wilsonart
2. Nevamar
3. Formica
4. Architect approved equal

D. Design: Frameless cabinet construction with the following door and drawer style:
1. Flush overlay.

E. Wood Species: White oak, unless otherwise noted.

1. Wood Stain Colors and Finishes: As selected by Architect from casework manufacturer's full range.

F. Face Veneer Cut: Rift cut.

G. Veneer Matching:

1. Provide veneers for each elevation from a single flitch, Slip matched.

H. Grain Direction:

1. Doors: Vertical with continuous vertical matching.
2. Face Frame Members: Lengthwise.
3. Drawer Fronts: Horizontal.
4. End Panels: Vertical.
5. Bottoms and Tops of Units: Side to side.
6. Knee Space Panels: Vertical.
7. Aprons: Horizontal.

I. Exposed Materials:

1. Plywood: Hardwood plywood with face veneer of species indicated, selected for compatible color and grain. Provide backs of same species as faces.
2. Solid Wood: Clear hardwood lumber of species indicated and selected for grain and color compatible with exposed plywood.
3. Edgebanding: Solid wood, minimum 1/8 inch thick and of same species as face veneer.

J. Semiexposed Materials:

1. Wood: Provide solid wood or hardwood plywood for semiexposed surfaces unless otherwise indicated.

    a. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed wood.
    b. Plywood: Hardwood plywood of same species as exposed wood. Provide backs of same species as faces.

K. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners.

L. Concealed Materials:

1. Solid Wood: With no defects affecting strength or utility.
2. Plywood: Hardwood plywood. Provide backs of same species as faces.

2.3 HARDWARE AND ACCESSORIES

A. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch-thick metal, and as follows:
1. Semi concealed Hinges for Flush Doors: ANSI/BHMA A156.9, B01361.

B. Cabinet Pulls: Mockett DP128 Series, 6-11/16” Round Top Pull, Stainless Steel Finish

C. Catches: Magnetic catches, BHMA A156.9, B03141.

D. Drawer Slides: BHMA A156.9.
1. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.

a. For drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.
b. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200.

E. Door and Drawer Locks: ANSI/BHMA A156.11, E07121.

1. Provide a minimum of two keys per lock and six master keys.
2. Provide locks where indicated.

F. Adjustable Shelf Supports:

1. Pin-type, single-pin metal shelf rests complying with ANSI/BHMA A156.9, Type B04013.

G. Grommets for Cable Passage: 2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
1. Color: To be selected by Architect from manufacturer's full range of colors.

H. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
1. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
2. Satin Stainless Steel: BHMA 630.

I. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

J. Coat Hook: In each teacher wall storage as indicated.

2.4 MATERIALS

A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.

C. Softwood Plywood: DOC PS 1.

2.5 FABRICATION

A. Wood-Veneer-Faced Cabinet Construction: As required by referenced quality standard, but not less than the following:

1. Bottoms of Cabinets and Tops of Wall Cabinets: 3/4-inch-thick, hardwood plywood.
2. Ends of Cabinets: 3/4-inch-thick, hardwood plywood.
3. Shelves: 3/4-inch-thick, hardwood plywood.
4. Backs of Cabinets: 3/4-inch-thick, hardwood plywood.

2.6 FINISH

A. Preparation: Sand lumber and plywood before assembling. Sand edges of doors and drawer fronts and molded shapes with profile-edge sander. Sand casework after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.

B. Staining: Remove fibers and dust and apply wash-coat sealer and stain to exposed and semiexposed surfaces as required to provide uniform color and to match approved Samples.

C. Finishing Open-Grain Woods: Apply manufacturer's standard three-coat, baked, clear finish consisting of a thermosetting catalyzed sealer and two coats of a thermosetting catalyzed conversion varnish. Sand and wipe clean between applications of sealer and topcoat and between topcoats. Topcoats may be omitted on concealed surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Grade: Install casework to comply with same quality standard grade as item to be installed.

B. Install casework level, plumb, and true in line; shim as required using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within 1/16 inch of a single plane. Align similar adjoining doors and drawers to a tolerance of 1/16 inch. Bolt adjacent cabinets together with joints flush, tight, and uniform.

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten cabinets to hanging strips, masonry, framing, wood blocking, or reinforcements in walls and partitions. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.

E. Fasten casework to adjacent units and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI/AWMAC/WI's "Architectural Woodwork Standards."

F. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.

G. Adjust operating hardware so doors operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 FIELD QUALITY CONTROL

A. Inspections: Provide inspection of installed Work through AWI's Quality Certification Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.

1. Inspection entity to prepare and submit report of inspection.

3.4 CLEANING

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.

END OF SECTION 123213

SECTION 076200 - SHEET METAL FLASHING AND TRIM

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. Roof-drainage sheet metal fabrications.
2. Formed wall sheet metal fabrications.
3. Formed equipment support flashing.
4. Underlayment materials

B. Related Requirements:
1. Section 042000 “Unit Masonry”
2. Section 047200 “Cast Stone Masonry”
3. Section 061053 "Miscellaneous Rough Carpentry"
4. Section 072100 “Thermal Insulation”
5. Section 072713 “ Modified Bit Sheet Air Barriers (WP-4 or WP-4C)” for sheet membrane weather barriers behind metal wall panels.
6. Section 072726 "Fluid-Applied Membrane Air Barriers (WP-2)" for fluid applied weather barriers at masonry cavity walls.
7. Section 074213.13 “Formed Metal Wall Panels”
8. Section 074213.23 “Metal Composite Material Wall Panels (ACM)”
9. Section 074293 “Soffit Panels”
10. Section 077100 “Roof Specialties” for premanufactured parapet coping
11. Section 077200 “Roof Accessories” for flashing related to premanufactured pipe covers
12. Section 077233 “Roof Hatches” for flashing related to roof hatches
13. Section 079100 “Preformed Joint Seals”
14. Section 079200 "Joint Sealants”
15. ~~Section 079500 “Expansion Joint Cover Assemblies”~~

1.3 COORDINATION

A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.

B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.

3. Review requirements for insurance and certificates if applicable.
4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 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 each manufactured product and accessory.
   2. Sample Warranty: For special warranty, including metal finishes.

B. Shop Drawings: For sheet metal flashing and trim.
   1. Submit shop drawings showing layout, joining, profiles and anchorages of fabricated work, layouts at 1/4” scale, details at 3” scale.
   2. Include plans, elevations, sections, and attachment details.
   3. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish manufactured or pre-fabricated, and field-assembled work.
   4. Include identification of material, thickness, weight, and finish for each item and location in Project.
   5. Include details for forming, including profiles, shapes, seams, and dimensions.
   6. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
   7. Include details of termination points and assemblies.
   8. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
   9. Include details of special conditions.
   10. Include details of connections to adjoining work.

C. Samples for Initial Review: For each type of sheet metal and accessory indicated with factory-applied finishes.
   1. Submit two, 12” square samples of specified sheet materials.
   2. Submit two, 12” long, completely finished units of specified factory-fabricated products.

D. Samples for Verification: For each type of exposed fabrication.
   1. Exposed to View Sheet Metal Flashings, Copings: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
   2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing similar to that required for this Project and whose products have a record of successful in-service performance.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Build mockup of typical flashing conditions as indicated on Drawings.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
2. Protect stored sheet metal flashing and trim from contact with water.

B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

A. Warranty: Manufacturer agrees to repair or replace sheet metal flashing that shows evidence of deterioration within specified warranty period.
1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing assemblies shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing shall not rattle, leak, or loosen, and shall remain watertight.

B. Sheet Metal Standard for Flashing: Comply with NRCA's "The NRCA Roofing Manual" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 coating designation prepainted by coil-coating process to comply with ASTM A755/A755M.
   1. Surface: Smooth, flat.
      a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   2. Color: As selected by Architect from manufacturer's full range.

C. Aluminum Sheet (Exposed Flashing): ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
   1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
   2. Color: As selected by Architect from manufacturer's full range.

D. Stainless Steel Sheet (Concealed Flashing): ASTM A240/A240M, Type 304, dead soft, fully annealed; with smooth, flat surface.

E. Stainless Steel for use as pitch pans: Minimum 24-gauge, commercial quality, ASTM A 653/A 653M.

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high temperatures. Provide primer in accordance with underlayment manufacturer's written instructions.
   1. Products: Subject to compliance with requirements, provide one of the following:
      a. GCP Applied Technologies Inc. ; Grace Ice and Water Shield HT.
      b. Carlisle Coatings & Waterproofing Inc; CCW WIP 300HT.
      c. Henry Company; Blueskin PE200 HT.
      d. Polyguard Products, Inc.; Deck Guard HT.
      e. Architect approved equal
   2. Source Limitations: Obtain underlayment from single source from single manufacturer.
   3. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F or higher.
   4. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F or lower.
   5. Use in high temperature conditions as indicated on the Drawings.

2.4 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
    b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
    c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
4. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329/F2329M.

C. Solder:
1. For Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.
2. For Zinc-Coated (Galvanized) Steel: ASTM B32, with maximum lead content of 0.2 percent.

D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

E. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

F. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.

2.5 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with details shown and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim to fit substrates without excessive oil canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep. Provide seam covers bedded in sealant.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Seams:
1. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

G. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters:

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
2. Fabricate in minimum 96-inch-long sections.
3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
4. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters.Shop fabricate interior and exterior corners.
5. Gutter Profile: As indicated on Drawings and in accordance with cited sheet metal standard.
6. Expansion Joints: Butt type with cover plate,
7. Gutters: Fabricate from the following materials:
   a. Galvanized Steel: 24 ga. minimum thick.

B. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.
1. Manufactured Hanger Style: As indicated on Drawings and in accordance with SMACNA's "Architectural Sheet Metal Manual."
2. Hanger Style: As indicated on Drawings
3. Fabricate from the following materials:
   a. Galvanized Steel: 24 ga. minimum thick.

C. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from the following materials:
   a. Galvanized Steel: 24 ga. minimum thick.

D. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape required, complete with outlet tubes and built-in overflows. Fabricate from the following materials:
   a. Galvanized Steel: 24 ga. minimum thick.

E. Downspout Boots: Provide and install cast iron boots.
1. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
   a. Neenah Foundry Company
   b. Architect approved equal
2. Finish and Color: Manufacturer’s standard powder coating. Color to be selected by Architect from manufacturers full range of colors.

F. Splash Blocks: Concrete, 3000 psi in 28 days. Provide and install with protection pads at all downspouts. Dimensions shall be a minimum 18" x 36" unless otherwise idicated.

2.7 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12-foot-long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from the following materials:
1. Stainless Steel: 20-gauge thick.

B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch-high, end dams. Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.

2.8 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following materials:
1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

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

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.

6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
7. Do not field cut sheet metal flashing and trim by torch.
8. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of uncoated-aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing sheet metal flashing and trim directly on wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated. Embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
3. Do not solder aluminum alloy coated steel.
4. Do not use torches for soldering.
5. Heat surfaces to receive solder, and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.

6. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.

1. Pretin edges of sheets with solder to width of 1-1/2 inches; however, reduce pretinning where pretinned surface would show in completed Work.
2. Do not solder metallic-coated steel and aluminum sheet.
3. Do not use torches for soldering.
4. Heat surfaces to receive solder, and flow solder into joint.

    a. Fill joint completely.
    b. Completely remove flux and spatter from exposed surfaces.

H. Rivets: Rivet joints where necessary for strength.

3.3 INSTALLATION OF WALL FLASHINGS

A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

3.4 INSTALLATION OF ROOF-DRAINAGE SYSTEM

A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.

B. Hanging Gutters:

1. Join sections with riveted and soldered joints.
2. Provide for thermal expansion.
3. Attach gutters at eave or fascia to firmly anchor them in position.
4. Provide end closures and seal watertight with sealant.
5. Slope to downspouts.
6. Fasten gutter spacers to front and back of gutter.
7. Anchor and loosely lock back edge of gutter to continuous cleat.
8. Anchor gutter with gutter brackets spaced not more than 24 inches apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.
9. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet apart. Install expansion-joint caps.

C. Downspouts:

1. Join sections with 1-1/2-inch telescoping joints.
2. Provide hangers with fasteners designed to hold downspouts securely to walls.
3. Locate hangers at top and bottom and at approximately 60 inches o.c.
4. Provide elbows at base of downspout to direct water away from building.
5. Connect downspouts to underground drainage system at locations where indicated.

D. Parapet Scuppers:

1. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
2. Anchor scupper closure trim flange to exterior wall and solder to scupper.
3. Loosely lock front edge of scupper with conductor head.

E. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper or gutter discharge.

F. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches in direction of water flow.

3.5 INSTALLATION OF MISCELLANEOUS FLASHING

A. Equipment Support Flashing:

1. Coordinate installation of equipment support flashing with installation of roofing and equipment.

2. Weld or seal flashing with elastomeric sealant to equipment support member.

3.6 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses.
5. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.
8. Contractor to verify compatibility of underlayment with PVC roofing membrane.

3.7 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.8 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

3.9 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.

B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.

C. Maintain sheet metal flashing and trim in clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

SECTION 077200 - ROOF ACCESSORIES

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. Prefabricated pipe and duct housing penetrations.
   2. Fall protection anchor post

B. Related Requirements:
   1. Section 075216 “Styrene-Butadiene-Styrene (SBS) Modified Bituminous Membrane Roofing”
   2. Section 076200 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, and miscellaneous sheet metal trim and accessories.
   3. Section 077100 "Roof Specialties" for premanufactured copings.

1.3 COORDINATION

A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.

B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: For roof accessories.

   1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.

C. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.

D. Delegated-Design Submittal: For roof accessories indicated comply with project design wind loads indicated on Drawings, signed and sealed by the qualified professional engineer responsible for their preparation and licensed in the state of Texas.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:

1. Size and location of roof accessories specified in this Section.
2. Method of attaching roof accessories to roof or building structure.
3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
4. Required clearances.

B. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

1.7 WARRANTY

A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof accessories to withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. Wind-Restraint Performance: As indicated on Drawings.

2.2 PIPE AND PENETRATION HOUSING

A. Pipe and Penetration Housing:
1. Manufacturer:
a. Roof Penetrations Housings, San Antonio, Texas; 1-800-994-0945; https://rphproducts.com/ .; Model: AWI-201412 “Medium Vault”.
b. Architect approved equal

2.3 ~~PIPE AND PENETRATION HOUSING~~ FALL PROTECTION ANCHOR POST SYSTEM:

A. Fall Protection Anchor Post System:
   1. Manufacturer:
      a. Guardian Fall Protection CB anchor series
      b. Architect approved equal

B. Provide all components for a complete system.

C. Reference Drawings for locations.

D. Anchor post system must comply with OSHA 1926 Subpart M, OSHA 1910 ANSI Z359.1-2007, and ANSI A10.32-2012 standards for fall protection.

2.4 METAL MATERIALS

A. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
   1. Exposed Coil-Coated Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

      a. Two-Coat Fluoropolymer Finish: AAMA 2605. System consisting of primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight.

B. Aluminum Extrusions and Tubes: ASTM B221, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.

C. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

D. Steel Shapes: ASTM A36/A36M, hot-dip galvanized according to ASTM A123/A123M unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Insulation: Manufacturer's standard rigid or semi rigid glass-fiber board of thickness indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Underlayment:

   1. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
   2. Polyethylene Sheet: 6-mil-thick polyethylene sheet complying with ASTM D4397.
   3. Slip Sheet: Building paper, 3 lb/100 sq. ft. minimum, rosin sized.
   4. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

1. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.

G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

H. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

I. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

J. Asphalt Roofing Cement: ASTM D4586/D4586M, asbestos free, of consistency required for application.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. 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 substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

C. Verify dimensions of roof openings for roof accessories.

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

3.2 INSTALLATION

A. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.

3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof accessories for waterproof performance.

C. Seal joints with elastomeric sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

A. Clean exposed surfaces according to manufacturer's written instructions.

B. Clean off excess sealants.

C. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077200

SECTION 088000 - GLAZING

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. Glass products.
2. ~~Laminated glass~~
3. Tempered glass
4. Insulating glass
5. ~~Insulated glass spandrel panels~~
6. Glazing sealants.
7. Glazing tapes.
8. Miscellaneous glazing materials.
9. Impact resistant security film

B. Related Requirements:
1. Section 081416 “Flush Wood Doors”
2. Section 084113 “Aluminum Framed Entrances and Storefronts”

1.3 DEFINITIONS

A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

C. IBC: International Building Code.

D. Interspace: Space between lites of an insulating-glass unit.

1.4 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.5 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.
1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

2. Review temporary protection requirements for glazing during and after installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Glass Samples: For each product; 12 inches square.

C. Glazing Accessory Samples: For sealants and colored spacers, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system.

D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturers of insulating-glass units with sputter-coated, low-E coatings, glass testing agency and sealant testing agency.

B. Product Certificates: For glass.

C. Product Test Reports: For tinted glass coated glass insulating glass and glazing sealants, for tests performed by a qualified testing agency.
   1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

1.8 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved and certified by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

E. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
   1. Install glazing in mockups to match glazing systems required for Project, including glazing methods.

2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
   1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
   2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
   3. Test no fewer than eight samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
   4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
   5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
   1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F

1.12 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
   1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.
   1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   1. Vitro Architectural Glass – basis of design
   2. AGC Glass Company North America, Inc.
   3. Guardian Glass
   4. Oldcastle Building Envelope™
   5. Pilkington North America.
   6. Viracon, Inc.
   7. Architect approved equal

B. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
   1. Obtain tinted glass from single source from single manufacturer.

C. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Delegated Design: Engage a qualified professional engineer, licensed in the state of Texas, to design glazing.

C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E1300.
   1. Design Wind Pressures: As indicated on Drawings.
   2. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.
      a. Wind Design Data: As indicated on Drawings.
      b. Basic Wind Speed: As indicated on Drawings
      c. Importance Factor: As indicated on Drawings
      d. Exposure Category: As indicated on Drawings
   3. Design Snow Loads: As indicated on Drawings.
   4. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
   5. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.

D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.

E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
   1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
   2. ~~For laminated-glass lites, properties are based on products of construction indicated.~~

3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/sq. ft. x h x deg F.
5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.
6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

~~A.~~ Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these ~~publications for glazing terms not otherwise defined in this Section or in referenced standards.~~

1. ~~NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."~~
2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.

1. Minimum Glass Thickness for Exterior Lites: 6 mm.
2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.

E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.

B. Tinted Annealed Float Glass: ASTM C1036, Type I, Class 2 (tinted), Quality-Q3.

C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

~~2.5 LAMINATED GLASS~~

~~A. Laminated Glass: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.~~

~~1. Construction: Laminate glass with polyvinyl butyral interlayer to comply with interlayer manufacturer's written instructions.~~

2. ~~Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.~~
3. ~~Interlayer Color: Clear unless otherwise indicated.~~

2.6 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E2190.
   1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
   2. Perimeter Spacer: Manufacturer's standard spacer material and construction.

2.7 GLAZING SEALANTS

A. General:
   1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
   2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
   3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.

B. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 100/50, Use NT.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Dow Corning Corporation.
      b. GE Construction Sealants; Momentive Performance Materials Inc.
      c. Pecora Corporation.
      d. Sika Corporation.
      e. Tremco Incorporated.
      f. Architect approved equal

2.8 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
   1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
   2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
   1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
   2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.9 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks:
   1. Type recommended by sealant or glass manufacturer.

D. Spacers:
   1. Type recommended by sealant or glass manufacturer.

E. Edge Blocks:
   1. Type recommended by sealant or glass manufacturer.

F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.10 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
   1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
      a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.11 IMPACT RESISTANT SECURITY FILM

A. Manufacturer:
   1. 3M; Ultra 800
   2. Armoured One; Shooter Attack Security Film
   3. Architect approved equal

B. Film Properties:
   1. Thickness: 8 mil nom.minimum
   2. Tensile Strength: 31,500 psi
   3. Yield Strength: 15,000 psi
   4. Break Strength: 253 lbs/in
   5. Puncture Strength: 183 lbf per ASTM D4830
   6. Flammability: Class A per ASTM E84

C. Location: As indicated on Drawings.

D. Warranty: Manufacturer standard

E. Installation: Install per manufacturer’s written instructions. Shall be free of wrinkles, bubbles and other similar imperfections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
   2. Presence and functioning of weep systems.
   3. Minimum required face and edge clearances.
   4. Effective sealing between joints of glass-framing members.

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

3.2 PREPARATION

A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.

B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.

C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.

D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.

F. Provide spacers for glass lites where length plus width is larger than 50 inches.
   1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
   2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.

G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.

H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.

J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 TAPE GLAZING

A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.

B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.

C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.

D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.

E. Do not remove release paper from tape until right before each glazing unit is installed.

F. Apply heel bead of elastomeric sealant.

G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 SEALANT GLAZING (WET)

A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.

C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.6 CLEANING AND PROTECTION

A. Immediately after installation remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
   1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.

C. Remove and replace glass that is damaged during construction period.

D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

3.7 INSULATING GLASS SCHEDULE

~~A. Glass Type (GL-1): Vitro SOLARBAN 70 (2) Clear + Clear Insulating Glass Unit~~
~~1. Overall Unit Thickness: 1 inch.~~
~~2. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).~~
~~3. Outdoor Lite: Vitro Solorban 70 clear annealed float glass.~~
~~4. Low-E Coating: Sputtered on second surface.~~
~~5. Interspace Content: 1/2 inch air space~~
~~6. Indoor Lite: Vitro Solorban 70 clear annealed float glass.~~
~~7. Performance Values:~~
~~a. Visible Light Transmission: 64 percent~~
~~b. Exterior Reflectance: 13 percent~~
~~c. Interior Reflectance: 14 percent~~
~~d. SHGC: 0.25~~
~~e. Heat Transfer Coefficient: U-Value Winter – 0.28, U-Value Summer – 0.24.~~
~~f. Light-to-solar gain (LSG): 2.37~~

B. Glass Type (GL-1): Vitro SOLARBAN Champane (2) Clear HT + Clear HT Insulating Glass Unit
1. Overall Unit Thickness: 1 inch.
2. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).
3. Outdoor Lite: Vitro SOLARBAN Champane Clear HT annealed float glass.
4. Low-E Coating: Sputtered on second surface.
5. Interspace Content: 1/2 inch air space
6. Indoor Lite: Vitro SOLARBAN Clear HT annealed float glass.
7. Performance Values:
   a. Visible Light Transmission: 47 percent
   b. SHGC: 0.32
   c. Heat Transfer Coefficient: U-Value Winter – 0.29, U-Value Summer – 0.27.

~~C. Glass Type (GL-2): Vitro SOLARBAN 70 (2) Clear + Clear Tempered Insulating Glass Unit~~
~~1. Overall Unit Thickness: 1 inch.~~
~~2. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).~~
~~3. Outdoor Lite: Vitro Solorban 70 clear tempered glass.~~
~~4. Low-E Coating: Sputtered on second surface.~~
~~5. Interspace Content: 1/2 inch air space~~
~~6. Indoor Lite: Vitro Solorban 70 clear tempered glass.~~
~~7. Locations: Where safety glazing is required.~~
~~8. Performance Values:~~
~~a. Visible Light Transmission: 64 percent~~
~~b. Exterior Reflectance: 13 percent~~
~~c. Interior Reflectance: 14 percent~~
~~d. SHGC: 0.25~~
~~e. Heat Transfer Coefficient: U-Value Winter – 0.28, U-Value Summer – 0.24.~~

~~f. Light-to-solar gain (LSG): 2.37~~

D. Glass Type (GL-2): Vitro SOLARBAN Champane (2) Clear HT Tempered + Clear HT Tempered Insulating Glass Unit
   1. Overall Unit Thickness: 1 inch.
   2. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).
   3. Outdoor Lite: Vitro SOLARBAN Champane Clear HT tempered glass.
   4. Low-E Coating: Sputtered on second surface.
   5. Interspace Content: 1/2 inch air space
   6. Indoor Lite: Vitro SOLARBAN Clear HT tempered glass.
   7. Performance Values:
      a. Visible Light Transmission: 47 percent
      b. SHGC: 0.32
      c. Heat Transfer Coefficient: U-Value Winter – 0.29, U-Value Summer – 0.27.

~~E. Glass Type (GL-3): Vitro SOLARBAN 70 (2) Clear + Clear Tempered Insulating Glass Unit~~
   ~~1. Overall Unit Thickness: 1 inch.~~
   ~~2. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).~~
   ~~3. Outdoor Lite: Vitro Solorban 70 clear tempered glass.~~
   ~~4. Low-E Coating: Sputtered on second surface.~~
   ~~5. Interspace Content: 1/2 inch air space~~
   ~~6. Indoor Lite: Vitro Solorban 70 clear tempered glass.~~
   ~~7. Security Window Film: Film applied on interior fourth surface.~~
   ~~8. Locations: Where safety glazing with security film is indicated or required.~~
   ~~9. Performance Values:~~
      ~~a. Visible Light Transmission: 64 percent~~
      ~~b. Exterior Reflectance: 13 percent~~
      ~~c. Interior Reflectance: 14 percent~~
      ~~d. SHGC: 0.25~~
      ~~e. Heat Transfer Coefficient: U-Value Winter – 0.28, U-Value Summer – 0.24.~~
      ~~f. Light-to-solar gain (LSG): 2.37~~

F. Glass Type (GL-3): Vitro SOLARBAN Champane (2) Clear HT Tempered + Clear HT Tempered Insulating Glass Unit with Security Window Film
   1. Overall Unit Thickness: 1 inch.
   2. Minimum Thickness of Each Glass Lite: 1/4 inch (6 mm).
   3. Outdoor Lite: Vitro SOLARBAN Champane Clear HT tempered glass.
   4. Low-E Coating: Sputtered on second surface.
   5. Interspace Content: 1/2 inch air space
   6. Indoor Lite: Vitro SOLARBAN Clear HT tempered glass.
   7. Security Window Film: Film applied on interior fourth surface.
   8. Locations: Where safety glazing with security film is indicated or required.
   9. Performance Values:
      a. Visible Light Transmission: 47 percent
      b. SHGC: 0.32
      c. Heat Transfer Coefficient: U-Value Winter – 0.29, U-Value Summer – 0.27.

3.8 MONOLITHIC GLASS SCHEDULE

A. Glass Type (GL-4): Clear fully tempered float glass.
   1. Minimum Thickness: 1/4 inch (6 mm).
   2. Product: Vitro clear tempered glass
   3. Locations: Where safety glazing is required.

END OF SECTION 088000

SECTION 093013 - CERAMIC TILING

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. Porcelain tile.
2. Glazed wall tile.
3. Quarry tile.
4. Thresholds.
5. Tile backing panels.
6. Waterproof membrane.
7. Crack isolation membrane.
8. Metal edge strips

B. Related Requirements:
1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
2. Section 083113 “Access Doors and Frames”
3. Division 23 – Floor Drains.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size plus joint width indicated.

D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.
1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Submittals:
   1. Product Data: For adhesives, indicating VOC content.
   2. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
   1. Submit installation details based on TCNA “Handbook for Ceramic, Glass and Stone Tile Installation.
   2. Identify by ANSI reference, manufacturer and product name, each individual component, adhesive and mixture used in the tile design submitted.
   3. Do not begin tile installation until tile details have been approved.

D. Samples for Initial Selection: For tile, grout, and accessories involving color selection.

E. Samples for Verification:
   1. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
   2. Full-size units of each type of trim and accessory for each color and finish required.
   3. Stone thresholds in 6-inch lengths.
   4. Metal edge strips in 6-inch lengths.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

C. Product Certificates: For each type of product.

D. Product Test Reports: For tile-setting and -grouting products.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
   2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Build mockup of each type of floor tile installation.
   2. Build mockup of each type of wall tile installation.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain tile of each color or finish from single source or producer.
   1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
   1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
   2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
   1. Stone thresholds.
   2. Waterproof membrane.
   3. Crack isolation membrane.
   4. Cementitious backer units.
   5. Metal edge strips.

2.2 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

   1. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. ANSI A118 Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. ISO 13007 Standards for Ceramic Tiles, Grouts, and Adhesives: Provide materials complying with ISO 13007 Standards.

D. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

E. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
   1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.1 TILE PRODUCTS

A. Products (Basis of Design): As indicated on Drawings.

B. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
   1. Daltile
   2. Mohawk Industries
   3. Emser Tile
   4. Architect approved equal

C. Porcelain Tile Type (CT-#):
   1. Certification: Tile certified by the Porcelain Tile Certification Agency.
   2. Face Size: As indicated on Drawings.
   3. Thickness: As indicated on Drawings.
   4. Face: As indicated on Drawings.
   5. Tile Color, Glaze, and Pattern: As indicated on Drawings.
   6. Grout Color: As indicated on Drawings.
   7. Trim Units: As indicated on Drawings.

D. Glazed Wall Tile Type (CT-#):
   1. Module Size: As indicated on Drawings.
   2. Face Size: As indicated on Drawings.
   3. Thickness: As indicated on Drawings.
   4. Face: As indicated on Drawings.
   5. Finish: As indicated on Drawings.
   6. Tile Color and Pattern: As indicated on Drawings.
   7. Grout Color: As indicated on Drawings.
   8. Mounting:
      a. Factory, back mounted.
      b. Pregrouted sheets of tiles are factory assembled and grouted with manufacturer's standard white silicone rubber.
   9. Trim Units: As indicated on Drawings.

E. Square-Edged Quarry Tile Type (QT-#):
   1. Face Size: As indicated on Drawings.
   2. Thickness: As indicated on Drawings.
   3. Wearing Surface: As indicated on Drawings.
   4. Dynamic Coefficient of Friction: Not less than 0.42.
   5. Finish: As indicated on Drawings.
   6. Tile Color and Pattern: As indicated on Drawings.
   7. Grout Color: As indicated on Drawings.

8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

2.2 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
   1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.

B. Marble Thresholds: ASTM C 503/C 503M, with a minimum abrasion resistance of 10 according to ASTM C 1353 or ASTM C 241/C 241M and with honed finish.
   1. Description: Uniform, fine- to medium-grained white stone with gray veining.

2.3 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.
   1. Thickness: 1/2 inch, Unless indicated otherwise.
   2. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.
   3. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
      a. Durock.
      b. Hardy Board
      c. Georgia-Pacific Building Products.
      d. United State Gypsum Company.
      e. Architect approved equal

2.4 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
   1. Adhesives shall have a VOC content of 65 g/L or less.

2.5 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
   1. Adhesives shall have a VOC content of 65 g/L or less.

2.6 SETTING MATERIALS

A. Modified Dry-Set Cement Mortar: ANSI A118.4 and ISO 13007 C1E.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Ultraflex LFT or a comparable product by one of the following:
      a. Custom Building Products. Versabond Flex
      b. Laticrete International, Inc. 253 Gold
      c. TEC; H.B. Fuller Construction Products Inc.

d. Architect approved equal

2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4 and ISO 13007; C2TE.
   a. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; MAPEI Ultraflex LFT or a comparable product by one of the following:
      1) Custom Building Products. Prolite
      2) Laticrete International, Inc. 255 Multimax
      3) Architect approved equal

2.7 GROUT MATERIALS (TG-#)

A. Ready to Use Grout: ANSI A118.6 and ASTM C267.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Flexcolor CQ or a comparable product by one of the following:
      a. Custom Building Products.
      b. Laticrete International, Inc.
      c. Architect approved equal

2.8 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Mapecem Quickpatch.
   2. Architect approved equal

B. Vapor-Retarder Membrane: Polyethylene sheeting, ASTM D 4397, 4.0 mils thick.

C. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Blanke Corporation.
      b. Ceramic Tool Company, Inc.
      c. Schluter Systems L.P.
      d. Architect approved equal

D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.
   1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; UltraCare Concentrated Tile & Grout Cleaner or a comparable product by one of the following:
      a. Aquamix by Custom Building Products
      b. Architect approved equal

2.9 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
   1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
   2. Verify that concrete substrates for tile floors installed with thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
      a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
      b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
   3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
   4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

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

3.2 PREPARATION

A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.

C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules and approved details. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are

referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
    a. Tile floors in wet areas.
    b. Tile floors consisting of tiles 8 by 8 inches or larger.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Glazed Wall Tile: 1/16 inch or as instructed by Architect.
2. Porcelain Tile: 1/4 inch or as instructed by Architect.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in modified dry-set mortar (thinset).
2. Do not extend waterproofing or crack isolation membrane under thresholds set in standard dry-set, modified dry-set or improved modified dry-set mortar. Fill joints between such thresholds and adjoining tile set on waterproofing or crack isolation membrane with elastomeric sealant.

J. Metal Edge Strips: Install at locations indicated.

3.4 TILE BACKING PANEL INSTALLATION

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use modified dry-set mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

B. Allow waterproofing to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.6 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.7 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
   1. Remove grout residue from tile as soon as possible.
   2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.8 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.9 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

   1. Ceramic Tile Installation: TCNA F113; thinset mortar.

a. Location: As indicated on Drawings.
b. Ceramic Tile Type: As indicated on Drawings.
c. Thinset Mortar: Medium-bed, modified dry-set mortar.
d. Grout: Standard unsanded cement grout.

2. Ceramic Tile Installation: TCNA F122; thinset mortar on waterproof membrane.
a. Location: As indicated on Drawings or required for waterproofing.
b. Ceramic Tile Type: As indicated on Drawings.
c. Thinset Mortar: Medium-bed, modified dry-set mortar.
d. Grout: Standard unsanded grout.

3. Ceramic Tile Installation: TCNA F125-Full; thinset mortar on crack isolation membrane.
a. Location: As indicated on Drawings or required for crack isolation.
b. Ceramic Tile Type: As indicated on Drawings.
c. Thinset Mortar: Medium-bed, modified dry-set mortar.
d. Grout: Standard unsanded grout.

B. Interior Wall Installations, Metal Studs:

1. Ceramic Tile Installation: TCNA W244C; thinset mortar on cementitious backer units or fiber-cement backer board.
a. Location: As indicated on Drawings.
b. Ceramic Tile Type: As indicated on Drawings.
c. Thinset Mortar: Modified dry-set mortar.
d. Grout: Standard unsanded grout.

END OF SECTION 093013

SECTION 095423 - LINEAR METAL 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. Section Includes:

1. Linear metal ceilings (interior).
2. Linear metal ceilings (exterior).
3. Trim and Accessories

B. Related Requirements:
1. Section 095113 “Acoustical Panel Ceilings”
2. Section 095426 “Suspended Wood Ceilings”
3. Section 095446 “Fabric-Wrapped Ceiling Panels”

1.3 COORDINATION

A. Coordinate layout and installation of linear metal 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.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For linear metal ceilings.

B. Shop Drawings: For linear metal ceilings.

1. Include reflected ceiling plans, sections, and details, drawn to scale, showing the following:

a. Linear ceiling patterns and joints.
b. Ceiling suspension members.
c. Method of attaching hangers to building structure and locations of cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
d. Ceiling-mounted items including, but not limited to, light fixtures, diffusers, grilles, speakers, sprinklers, and access panels.
e. Ceiling perimeter and penetrations through ceiling; trim and moldings.

C. Samples: For each exposed product and for each type, color, and finish specified, 12 inches long in size.

D. Samples for Initial Selection: For units with factory-applied colors and finishes.

1. Include Samples of accessories involving color and finish selections.

E. Samples for Verification: For the following products:

1. Linear Metal Panels: 12 inches long by full-width Samples of each type, color, and finish and a 12-inch-long spliced section.
2. Suspension-System Members: 12-inch-long Sample of each type.
3. Exposed Molding and Trim: 12-inch-long Samples of each type, color, and finish.
4. Filler Strips: 12-inch-long Samples of each type, color, and finish.
5. Sound Absorbers: 12 inches long by full width.
6. End Caps: Full size.

F. Delegated Design Submittals: For design of attachment devices.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Product Test Reports: For each linear metal ceiling, for tests performed by a qualified testing agency.

C. Evaluation Reports: For linear-metal-ceiling framing systems.

D. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Linear-Metal-Ceiling Components: Quantity of each pan, carrier, accessory, and exposed molding and trim equal to 2 percent of quantity installed.

1.9 QUALITY ASSURANCE

A. Testing Agency Qualifications: Accredited by National Voluntary Laboratory Accreditation Program for testing indicated.

B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Build mockup of each type of linear metal ceiling as shown on Drawings.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver ceiling components and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they are protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Handle ceiling components and accessories in a manner that prevents damage.

1.11 PROJECT CONDITIONS

A. Environmental Limitations: Do not install interior ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, licensed in the state of Texas, to design attachment devices.

B. Structural Performance: Exterior linear metal ceilings to withstand exterior exposure, the effects of gravity loads, and the following loads and stresses without showing permanent deformation of ceiling system components, including panels and suspension system; noise or metal fatigue caused by vibration, deflection, and displacement of ceiling panels; or permanent damage to fasteners and anchors:

1. Wind Load: Uniform pressure indicated on Drawings, acting inward or outward.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F material surfaces.

D. Seismic Criteria: Provide linear metal ceilings designed and installed to withstand the effects of earthquake motions in accordance with and requirements of authorities having jurisdiction.

2.2 LINEAR METAL CEILINGS (EXTERIOR) (MWS-1)

A. Products (Basis of Design): As indicated on Drawings.

B. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
1. Armstrong
2. Rockfon

3. Acoustical Surfaces Inc (ASI)
4. Architect approved equal

C. Metal Panels: Complying with ASTM E1264 for Type XIII and formed to snap on to carriers securely, without separate fasteners.

1. Surface-Burning Characteristics: For metal-panel assemblies, including backings, determined by testing in accordance with ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

   a. Flame-Spread: ASTM E 1264; Class A.
   b. Smoke-Developed Index: 50 or less.

2. Metal: Electrolytic zinc-coated steel sheet, ASTM A879/A879M, 04Z coating; surface treatment as recommended by finish manufacturer for type of use and painted finish indicated.
3. Form (exterior): Nonperforated.
   a. Perforation Pattern: Manufacturers standard
4. Panel Thickness: Manufacturer standard but not less than 0.020 inch.
5. Panel Edge Detail: Manufacturer's standard.
6. Panel Width: As indicated on Drawings.
7. Panel Depth: Manufacturer's standard.
8. Metal-Panel Finish: Protected on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping and as follows:
   a. Color-Coated Finish: Manufacturer's powder-coat baked paint finish complying with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness.

      1) Color and Pattern: As indicated on Drawings.
      2) Light Reflectance (LR) Coefficient: Not less than 0.61 LR when tested in accordance with ASTM E1477.

D. Panel Splices: Formed for snap fit into butt-cut panels, 4 inches minimum, long.

1. Finish: Manufacturer's standard.

E. End Caps: Manufacturer's standard material fabricated to fit and conceal exposed ends of panels.

1. Finish: Matching panel.

F. Filler Strips: Manufacturer's standard, fabricated to close voids between panels.

1. Type: Manufacturer's standard.
2. Finish: Matching panel.

G. Moldings and Trim: Manufacturer's standard for exposed members, to conceal edges of penetrations through ceiling, to conceal ends of panels and carriers, for fixture trim and adapters, for fasciae at changes in ceiling height, and for other conditions; of metal and finish matching linear metal panels or extruded plastic unless otherwise indicated.
1. For Circular Penetrations of Ceiling: Fabricate edge moldings to diameter required to fit penetration exactly.
2. Provide matching closure trim at perimeter of all soffit and ceiling panel applications, at intermediate interrupting beams, and all around general perimeter of each area.
3. Finish: Matching panel.

H. Vents: Provide continuous 4” matching metal perforated vent screed trim with insect screen all along the inside edge of the canopy soffit at the building face, and at the outside edges of the canopy area. None are required along intermediate beams.

I. Carrier Suspension System: Manufacturer's standard complying with requirements in ASTM C635/C635M for applications indicated; complete with carriers, splice sections, stabilizing components, connector clips, alignment clips, leveling clips, hangers, molding, trim, retention clips, load-resisting struts, fixture adapters, and other suspension components required to support ceiling units and other ceiling-supported construction.

1. Material: ASTM A653/A653M, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation.
2. Structural Classification: Heavy-duty system.
3. Expanelsion Carriers: Manufacturer's standard carriers allowing for irregularities or other unusual space conditions.
4. Stabilizer Channels, Tees, and Bars: Manufacturer's standard components for stabilizing main carriers.
5. Carrier Splices: Same metal, profile, and finish as for carriers.
6. Carrier Finish: Flat black.
7. Hold-Down Clips: Manufacturer's standard hold-down clips spaced as standard with manufacturer.
8. At all exterior locations install manufacturer’s recommended rigid grid, channel, and other supports to resist wind uplift / downlift for wind loads indicated by International Building Code and Texas Department of Insurance Windstorm requirements as applicable to the installed site location and configuration of the installation in this project.

2.3 LINEAR METAL CEILINGS (INTERIOR) (MWS-2)

A. Products (Basis of Design): As indicated on Drawings.

B. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
1. Armstrong
2. Rockfon
3. Acoustical Surfaces Inc (ASI)
4. Architect approved equal

C. Metal Panels: Complying with ASTM E1264 for Type XIII and formed to snap on to carriers securely, without separate fasteners.

1. Surface-Burning Characteristics: For metal-panel assemblies, including backings, determined by testing in accordance with ASTM E84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

   a. Flame-Spread: ASTM E 1264; Class A.
   b. Smoke-Developed Index: 50 or less.

2. Metal: Electrolytic zinc-coated steel sheet, ASTM A879/A879M, 04Z coating; surface treatment as recommended by finish manufacturer for type of use and painted finish indicated.
3. Form (interior): Perforated.
4. Noise Reduction Coefficient (NRC) Rating: Not less than 0.70 when tested in accordance with ASTM C423.
5. Backing: Manufacturer's standard black felt to provide NRC rating indicated for perforation pattern indicated.
6. Panel Thickness: Manufacturer standard but not less than 0.020 inch.
7. Panel Edge Detail: Manufacturer's standard.

8. Panel Width: As indicated on Drawings.
9. Panel Depth: Manufacturer's standard.
10. Metal-Panel Finish: Protected on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping and as follows:
    a. Color-Coated Finish: Manufacturer's powder-coat baked paint finish complying with coating manufacturer's written instructions for surface preparation, pretreatment, application, baking, and minimum dry film thickness.

        1) Color and Pattern: As indicated on Drawings.
        2) Light Reflectance (LR) Coefficient: Not less than 0.61 LR when tested in accordance with ASTM E1477.

D. Panel Splices: Formed for snap fit into butt-cut panels, 4 inches minimum, long.

1. Finish: Manufacturer's standard.

E. End Caps: Manufacturer's standard material fabricated to fit and conceal exposed ends of panels.

1. Finish: Matching panel.

F. Filler Strips: Manufacturer's standard, fabricated to close voids between panels.

1. Type: Manufacturer's standard.
2. Finish: Matching panel.

G. Moldings and Trim: Manufacturer's standard for exposed members, to conceal edges of penetrations through ceiling, to conceal ends of panels and carriers, for fixture trim and adapters, for fasciae at changes in ceiling height, and for other conditions; of metal and finish matching linear metal panels or extruded plastic unless otherwise indicated.
1. For Circular Penetrations of Ceiling: Fabricate edge moldings to diameter required to fit penetration exactly.
2. Provide matching closure trim at perimeter of all soffit and ceiling panel applications, at intermediate interrupting beams, and all around general perimeter of each area.
3. Finish: Matching panel.

H. Carrier Suspension System: Manufacturer's standard complying with requirements in ASTM C635/C635M for applications indicated; complete with carriers, splice sections, stabilizing components, connector clips, alignment clips, leveling clips, hangers, molding, trim, retention clips, load-resisting struts, fixture adapters, and other suspension components required to support ceiling units and other ceiling-supported construction.

1. Material: ASTM A653/A653M, hot-dip galvanized, cold-rolled sheet steel, G60 coating designation.
2. Structural Classification: Heavy-duty system.
3. Expanelsion Carriers: Manufacturer's standard carriers allowing for irregularities or other unusual space conditions.
4. Stabilizer Channels, Tees, and Bars: Manufacturer's standard components for stabilizing main carriers.
5. Carrier Splices: Same metal, profile, and finish as for carriers.
6. Carrier Finish: Flat black.

2.4 CARRIER-SYSTEM HANGERS, BRACES, AND TIES

A. Attachment Devices: Size for 5 times the design load indicated in ASTM C635/C635M, Table 1, Direct Hung, unless otherwise indicated.

1. 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 in accordance with ASTM E1190 conducted by a qualified testing and inspecting agency.

B. Wire Hangers, Braces, and Ties: Provide wire complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at 3 times the hanger design load indicated in ASTM C635/C635M, Table 1, Direct Hung is less than yield stress of wire, but provides not less than 0.106-inch-diameter wire.

C. Exterior Bracing: Cold-rolled steel channels and angles, hot-dip galvanized to comply with ASTM A653/A653M, G60 coating designation; size and profile as required to withstand wind load.

2.5 ACCESSORIES

A. Access Panels: Provide manufacturer's standard trim-less detail access panel assemblies consisting of back framing and matching exposed ceiling plank panels at all locations required by the documents for above ceiling access required at mechanical, plumbing or electrical locations. Contractor shall coordinate with the CMAR for required locations.

1. Size: As indicated on Drawings.

B. Air-Distribution Devices: Where indicated on Drawings, provide independently suspended air-distribution devices that are relocatable and adjustable from below finished ceiling, that do not interrupt ceiling components, and that are fully concealed by and integrated with ceiling system.

C. Trim Around Light Fixtures: Provide manufacturer's standard details for installation of light fixtures in the plank ceiling and soffit systems, and any additional concealed support framing members necessary. All framing and grid supports in exterior locations shall be galvanized.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which linear metal 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 linear metal ceilings.

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

3.2 PREPARATION

A. Measure each ceiling area and establish layout of linear metal panels.

1. Balance border widths at opposite edges of each ceiling.
2. Avoid using less-than-half-width panels at borders.

3.3 INSTALLATION OF LINEAR METAL CEILINGS

A. Comply with ASTM C636/C636M and seismic requirement indicated, in accordance with 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. 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.
4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns in 3 inches. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate to which hangers are attached and for type of hanger involved.
5. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, power-actuated fasteners, or postinstalled mechanical or adhesive anchors that extend through forms into concrete.
6. 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.
7. Do not attach hangers to steel deck tabs.
8. Do not attach hangers to steel roof deck. Attach hangers to structural members.
9. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
10. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Install edge moldings and trim at perimeter of linear metal ceiling area and where necessary to conceal edges and ends of linear metal panels.

1. Screw attach moldings to substrate at intervals of not more than 16 inches o.c. and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
2. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension-system carriers so they are aligned and securely interlocked with one another.

1. Install stabilizer channels, tees, and bars at regular intervals to stabilize carriers and at light fixtures, air-distribution equipment, access doors, and other equipment; spaced as standard with manufacturer for use indicated.
2. Remove and replace dented, bent, or kinked members.

E. Cut linear metal panels for accurate fit at borders and at interruptions and penetrations by other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness.

F. Install linear metal panels in coordination with suspension system and exposed moldings and trim.
1. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.
2. Install directionally textured or patterned metal panels in directions indicated.
3. Where metal pan ends are visible, install end caps unless trim is indicated.
4. Install filler strips.

5. Install sound-absorbent pads at right angle to perforated metal panels so pads do not hang unsupported.

G. Install hold-down clips where indicated.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:

1. Suspended ceiling system.
2. Hangers, anchors, and fasteners.

B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

C. Tests and Inspections: Testing and inspecting of completed installations of linear metal ceiling hangers, anchors, and fasteners to take place in successive stages, in test areas and using methods as follows. Do not proceed with installations of linear metal ceiling hangers for the next area until test results for previously completed installations show compliance with requirements.

1. Test Areas: Test installation of ceiling suspension systems on each floor when installation has reached 20 percent completion but before panels have been installed.

D. Linear metal ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

3.5 CLEANING

A. Clean exposed surfaces of linear metal ceilings, including trim and edge moldings, after removing strippable, temporary protective covering if any. Comply with manufacturer's written instructions for stripping of temporary protective covering, 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, including dented and bent units.

END OF SECTION 095423

SECTION 096466 - WOOD ATHLETIC FLOORING

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 wood athletic flooring.

B. Related Requirements:
   1. Section 126600 “Telescoping Stands” for locations of rolling loads that require wood blocking under the work of this section.

1.3 COORDINATION

A. Coordinate layout and installation of slab depressions to accommodate layout and height of wood flooring assembly.

B. Coordinate layout and installation of flooring with floor inserts for gymnasium equipment.

C. Coordinate the location and size for wood blocking support for telescoping stands.

1.4 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 wood athletic flooring.
   2. Include dimension drawings indicating the location of rolling loads from telescoping bleachers.

B. Shop Drawings: For each type of floor assembly, include the following:
   1. Plans, sections, and attachment details.
   2. Details of concrete-slab depressions.
   3. Locations of different grades of wood flooring.
   4. Expansion provisions and trim details.
   5. Layout, colors, widths, and dimensions of game lines and markers.
   6. Locations of floor inserts for athletic equipment installed through flooring assembly.

C. Samples: For each exposed product and for each color and texture specified, approximately 12 inches long in size.
   1. Include Sample sets showing the full range of normal color and texture variations expected in wood flooring.
   2. Include Sample sets showing finishes and game-line and marker paints applied to wood flooring.

D. Samples for Initial Selection: For each type of wood athletic flooring and accessory in each type of exposed color and finish.

1. Include manufacturer's color charts showing colors and glosses available for the following:

    a. Floor finishes.
    b. Game-line and marker paints.

E. Samples for Verification: For each type of wood athletic flooring and accessory required; approximately 12 inches long and of same thickness and material indicated for the Work.
1. Include Sample sets showing the full range of normal color and texture variations expected in wood flooring.
2. Include Sample sets showing finishes and game-line and marker paints applied to wood flooring.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each wood athletic flooring system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wood athletic flooring and finish systems to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual that has been approved by MFMA as an accredited Installer according to the MFMA Accreditation Program.
1. Installer responsibilities include installation and field finishing of wood athletic flooring components and accessories, and application of game lines and markers.

B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for installation.
1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver floor assembly materials in unopened cartons or bundles.

B. Protect wood from exposure to moisture. Do not deliver wood components until after concrete, masonry, plaster, ceramic tile, and similar wet-work is complete and dry.

C. Store wood components in a dry, warm, well-ventilated, weathertight location and in a horizontal position.

1.9 FIELD CONDITIONS

A. Conditioning period begins not less than seven days before wood athletic flooring installation, is continuous through installation, and continues not less than seven days after installation.

1. Environmental Conditioning: Maintain ambient temperature between 65 and 75 deg F and relative humidity planned for building occupants, but not less than 35 percent or more than 50 percent, in spaces to receive wood athletic flooring during the conditioning period.
2. Wood Conditioning: Move wood components into spaces where they will be installed, no later than beginning of the conditioning period.
   a. Do not install wood athletic flooring until wood components adjust to relative humidity of, and are at same temperature as, spaces where they are to be installed.
   b. Open sealed packages to allow wood components to acclimatize immediately on moving wood components into spaces in which they will be installed.

B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.

C. Install wood athletic flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products (Basis of Design): As indicated on Drawings.

B. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
1. Robbins Sports Surfaces
2. Connor Sports
3. Tarkett
4. Architect approved equal

2.2 SYSTEM DESCRIPTION

A. System Type: Anchored resilient. Systems with resilient pads that are mechanically restrained by channels and clips.

B. Overall System Height: As indicated on Drawings.

2.3 FLOORING MATERIALS (WAF-#)

A. Maple Flooring: Comply with MFMA grading rules for species, grade, and cut.
1. Certification: Provide flooring that carries MFMA mark on each bundle or piece.

B. Random-Length Strip Flooring: Northern hard maple (Acer saccharum), kiln dried, random length, tongue and groove, and end matched.
1. Grade: MFMA-RL Second and Better.
   a. Exception: For areas under stacked portion of telescoping bleachers that are normally concealed from view, provide Third and Better Grade.
2. Thickness: 25/32 inch.
3. Face Width: 2-1/4 inches.

C. Reference Drawings for location of existing subfloor with new wood finish flooring (patch and repair) or locations of all new subfloor and wood finish flooring.

D. Reuse existing ¾" wood gym flooring, sand and refinish. Salvage quantity of wood gym flooring as directed by Architect and in good undamaged condition of sufficient area for sanding, refinishing, and reuse in the trophy cases where indicated.

2.4 SUBFLOOR MATERIALS

A. Plywood Underlayment: APA rated, C-D plugged, exterior glue, tongue and groove, 15/32 inch thick.

B. Resilient Underlayment: Flexible, multicellular, closed-cell, expanded polyethylene-foam sheet; nominal 2-lb/cu. ft. density.
   1. Thickness: 7/16 inch.

C. Wood blocking: sized to support superimposed loads from telescoping stands without deflection in wood flooring system.

2.5 FINISHES

A. Floor-Finish System: System of compatible components recommended in writing by flooring manufacturer, and MFMA approved.
   1. Floor-Sealer Formulation: Pliable, penetrating type. MFMA Group 1, Sealers.
   2. Finish-Coat Formulation: Formulated for gloss finish indicated and multicoat application.
      a. Type: MFMA Group 5, Water-Based Finishes.
   3. Game-Line and Marker Paint: Industrial enamel compatible with finish coats and recommended in writing by manufacturers of finish coats, and paint for this use.

2.6 ACCESSORIES

A. Vapor Retarder: ASTM D 4397, polyethylene sheet not less than 6 mils thick.

B. Resilient Wall Base: Molded, vented, rubber or vinyl cove base; 4 by 3 by 48 inches; with premolded outside corners.
   1. Color: as selected by Architect from Manufacturer's standard colors.

C. Fasteners: Type and size recommended by manufacturer, but not less than those recommended by MFMA for application indicated.

D. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by wood athletic flooring manufacturer.

E. Adhesives: Manufacturer's standard for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of the Work.

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

C. Concrete Slabs: Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
   1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
      a. Anhydrous Calcium Chloride Test: ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
      b. Relative Humidity Test: Using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
      c. Perform additional moisture tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

A. Concrete Slabs:
   1. Grind high spots and fill low spots on concrete substrates to produce a maximum 1/8-inch deviation in any direction when checked with a 10-foot straight edge.
   2. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
   3. Remove coatings including curing compounds and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone; use mechanical methods recommended by manufacturer. Do not use solvents.

B. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Comply with wood athletic flooring manufacturer's written instructions, but not less than written recommendations of MFMA applicable to flooring type indicated.

B. Pattern: Lay flooring parallel with long dimension of space to be floored unless otherwise indicated.

C. Expansion Spaces: Provide as indicated, but not less than that required by manufacturer's written instructions and MFMA's written recommendations at walls and other obstructions, and at interruptions and terminations of flooring.
   1. Cover expansion spaces with base molding, trim, and saddles, as indicated on Drawings.

D. Vapor Retarder: Cover entire slab area beneath wood flooring. Install with joints lapped a minimum of 6 inches and sealed.

E. Underlayment: Install perpendicular to direction of flooring, staggering end joints in adjacent rows.

F. Channels: Anchor channels to substrate according to manufacturer's written instructions.
   1. Insert steel clip at each intersection of a flooring strip with a channel.

G. Strip Flooring: Mechanically fasten perpendicular to supports.

H. Installation Tolerances: 1/8 inch in 10 feet of variance from level.

3.4 SANDING AND FINISHING

A. Allow installed flooring to acclimate to ambient conditions before sanding.

B. Follow applicable recommendations in MFMA's "Industry Recommendations for Sanding, Sealing, Court Lining, Finishing, and Resurfacing of Maple Gym Floors."

C. Machine sand with coarse, medium, and fine grades of sandpaper to achieve a level, smooth, uniform surface without ridges or cups. Remove sanding dust by tack or vacuum.

D. Finish: Apply seal and finish coats of finish system according to finish manufacturer's written instructions. Provide no fewer than four coats total and no fewer than two finish coats.
   1. Water-Based Finishes: Use finishing methods recommended by finish manufacturer to reduce grain raise and side bonding effect.
   2. Game-Line and Marker Paint: Apply game-line and marker paint between final seal coat and first finish coat according to paint manufacturer's written instructions.
      a. Mask flooring at game lines and markers and apply paint to produce lines and markers with sharp edges.
      b. Where game lines cross, break minor game line at intersection; do not overlap lines.
      c. Apply game lines and markers in widths and colors according to requirements indicated on Drawings and the National Federation of State High School Associations.
      d. Apply finish coats after game-line and marker paint is fully cured.

3.5 PROTECTION

A. Protect wood athletic flooring during remainder of construction period to allow finish to cure and to ensure that flooring and finish are without damage or deterioration at time of Substantial Completion.
   1. Do not cover flooring after finishing until finish reaches full cure and not before seven days after applying last finish coat.
   2. Do not move heavy and sharp objects directly over flooring. Protect fully cured floor finishes and surfaces with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 096466

SECTION 097200 - WALL COVERINGS

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. Vinyl wall covering.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.

B. Shop Drawings: Show location and extent of each wall-covering type. Indicate pattern placement, seams and termination points.

C. Samples: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 36 inches long in size.

1. Wall-Covering Sample: From same production run to be used for the Work.

a. Show complete pattern repeat.
b. Mark top and face of fabric.

D. Samples for Initial Selection: For each type of wall covering.

1.5 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for installation.

1. Build mockups for each type of wall covering on each substrate required. Comply with requirements in ASTM F1141 for appearance shading characteristics.
2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 FIELD CONDITIONS

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

B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.

C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates in accordance with test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

    a. Flame-Spread Index: 25 or less.
    b. Smoke-Developed Index: 50 or less.

2. Fire-Growth Contribution: No flashover and heat and smoke release when tested in accordance with NFPA 265.

2.2 VINYL WALL COVERING (CPVP-#)

A. Products (Basis of Design): As indicated on Drawings.

B. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
1. Koroseal
2. Carnegie Fabrics

3. DreamScape
4. Tectonics
5. 3M
6. Architect Approved equal

C. Description: Provide vinyl products in rolls from same production run and complying with the following:

1. FS CCC-W-408D and Wallcovering Association's W-101.
2. ASTM F793/F793M for peelable wall coverings.

D. Total Weight: Manufacturer standard for product indicated.

E. Width: Manufacturer standard for product indicated.

F. Backing: Manufacturer standard for product indicated.

G. Mildew Resistance: Rating of zero or 1 when tested in accordance with ASTM G21.

H. Colors, Textures, and Patterns: As indicated on Drawings.

2.3 ACCESSORIES

A. Adhesive: Mildew-resistant, nonstaining adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.

B. Primer/Sealer: Mildew resistant, complying with requirements in Section 099010 "Painting" and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.

C. Metal Primer: Interior ferrous metal primer complying with requirements in Section 099010 "Painting" and recommended in writing by primer and wall-covering manufacturers for intended substrate.

D. Wall Liner: Nonwoven, synthetic underlayment and adhesive as recommended in writing by wall-covering manufacturer.

E. Seam Tape: As recommended in writing by wall-covering manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation surfaces being true in plane and vertical and horizontal alignment, maximum moisture content, and other conditions affecting performance of the Work.

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

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, and mildew.

C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.

1. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
2. Plaster: Allow plaster to cure for at least 90 days. Neutralize areas of high alkalinity. Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
3. Metals: If not factory primed, clean and apply metal primer as recommended in writing by metal-primer manufacturer and wall-covering manufacturer.
4. Gypsum Board: Apply primer/sealer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
5. Painted Surfaces:

a. Check for pigment bleeding. Apply primer/sealer to areas susceptible to pigment bleeding as recommended in writing by primer/sealer manufacturer.
b. Sand gloss, semigloss, and eggshell finishes with fine sandpaper.

D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 INSTALLATION OF WALL LINER

A. Install wall liner, without gaps or overlaps. Form smooth wrinkle-free surface for finished installation. Do not begin wall-covering installation until wall liner has dried.

3.4 INSTALLATION OF WALL COVERING

A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.

B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.

C. Install strips in same order as cut from roll.

1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.

D. Install wall covering without lifted or curling edges and without visible shrinkage.

E. Install seams vertical and plumb at least 6 inches from outside corners and 6 inches from inside corners unless a change of pattern or color exists at corner. Horizontal seams are not permitted.

F. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.

G. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.5 CLEANING

A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.

B. Use cleaning methods recommended in writing by wall-covering manufacturer.

C. Replace strips that cannot be cleaned.

D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 097200

SECTION 098400 - SOUND-ABSORBING UNITS

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 shop-fabricated, acoustical panel units tested for acoustical performance, including the following:
   1. Sound-absorbing wall panels.

1.3 DEFINITIONS

A. NRC: Noise Reduction Coefficient.

B. SAA: Sound Absorption Average.

1.4 PRE-INSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include fabric facing, panel edge, core material, and mounting indicated.

B. Sustainable Design Submittals:
   1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
   2. Product Certificates: For indigenous materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project, means of transportation, and cost for each indigenous material.
   3. Environmental Product Declaration: For each product.
   4. Product Data: For adhesives, indicating VOC content.
   5. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: For unit assembly and installation.
   1. Include plans, elevations, sections, and mounting devices and details.
   2. Include details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge profile and core materials.
   3. Include details at cutouts and penetrations for other work.
   4. Include direction of fabric weave and pattern matching.

D. Samples for Initial Selection: For each type of fabric facing.
   1. Include Samples of hardware and accessories involving color or finish selection.

E. Samples for Verification: For the following products:
   1. Fabric: Full-width by approximately 36-inch- long Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.
   2. Panel Edge: 12-inch-long Sample(s) showing each edge profile, corner, and finish.
   3. Core Material: 12-inch-square Sample at corner.
   4. Mounting Devices: Full-size Samples.
   5. Assembled Panels: Approximately 36 by 36 inches, including joints and mounting methods.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Elevations and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
   1. Electrical outlets, switches, and thermostats.

B. Product Certificates: For each type of unit.

C. Sample Warranty: For manufacturer's special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of unit to be included in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal instructions.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Fabric: For each fabric, color, and pattern installed, provide length equal to 10 percent of amount installed, but no fewer than 10 sq. yd., full width of bolt.
   2. Mounting Devices: Full-size units equal to 5 percent of amount installed, but no fewer than five devices, including unopened adhesives.

1.9 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials, fabrication, and installation.
   1. Build mockup of typical wall area 48 inches wide by full height. Include intersection of wall and ceiling, corners, and perimeters.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
   3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Comply with fabric and unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.11 FIELD CONDITIONS

A. Environmental Limitations: Do not install units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Air-Quality Limitations: Protect units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.

C. Field Measurements: Verify unit locations and actual dimensions of openings and penetrations by field measurements before fabrication and indicate them on Shop Drawings.

1.12 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace units and components that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to the following:
      a. Acoustical performance.
      b. Fabric sagging, distorting, or releasing from panel edge.
      c. Warping of core.
   2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain wall and ceiling units specified in this Section from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: Units shall comply with "Surface-Burning Characteristics" or "Fire Growth Contribution" Subparagraph below, or both, as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. Surface-Burning Characteristics: Comply with ASTM E 84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
      a. Flame-Spread Index: 25 or less.
      b. Smoke-Developed Index: 450 or less.
   2. Fire Growth Contribution: Comply with acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 Method B Protocol or NFPA 286.

2.3 SOUND-ABSORBING WALL UNITS (AWP-#)

A. Products (Basis of Design): As indicated on Drawings.

B. Manufacturers: Subject to compliance with requirements, manufacturers which may be incorporated in the work include, but are not limited to, the following:
   1. Duval Tex
   2. Acoustical Solutions
   3. Acoustical Surfaces Inc (ASI)
   4. Armstrong
   5. Architect approved equal

C. Sound-Absorbing Wall Panel: Manufacturer's standard panel construction.

   1. Panel Shape: Flat.
   2. Mounting: Back mounted with manufacturer's standard metal clips or bar hangers, secured to substrate.
   3. Core: Cementitious-fiber board.
   4. Edge Construction: Manufacturer's standard chemically hardened core.
   5. Edge Profile: Square.
   6. Corner Detail in Elevation: Square with continuous edge profile indicated.
   7. Reveals Between Panels: Reveals as indicated on Drawings.
   8. Facing Material:
      a. Fabric from same dye lot.
      b. Color and Pattern: As indicated on Drawings.
   9. Acoustical Performance: Sound absorption NRC of not less than 0.70 according to ASTM C 423 for mounting indicated and according to ASTM E 795.
   10. Nominal Core Thickness: As indicated on Drawings.
   11. Panel Width: As indicated on Drawings.
   12. Panel Height: As indicated on Drawings.
   13. Panel Finish: As indicated on Drawings.

2.4 MATERIALS

A. Core Materials:
   1. Cementitious-Fiber Board: Density of not less than 20 lb/cu. ft.

B. Facing Material: As indicated in Section 019000 “Interior Finish Schedule”.

C. Mounting Devices: Concealed on back of unit, recommended by manufacturer to support weight of unit, and as follows:
   1. Metal Clips or Bar Hangers: Manufacturer's standard two-part metal "Z" clips, with one part of each clip mechanically attached to back of unit and the other part to substrate, designed to permit unit removal.

2.5 FABRICATION

A. Standard Construction: Use manufacturer's standard construction unless otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.

B. Edge Hardening: For cores, chemically harden core edges and areas of core where mounting devices are attached.

C. Core-Face Layer: Evenly stretched over core face and edges and securely attached to core; free from puckers, ripples, wrinkles, or sags.

D. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.
   1. Square Corners: Tailor corners.

2. Radius and Other Nonsquare Corners: Attach facing material so there are no seams or gathering of material.
3. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches in adjacent units.

E. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch for the following:
1. Thickness.
2. Edge straightness.
3. Overall length and width.
4. Squareness from corner to corner.
5. Chords, radii, and diameters.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabric, fabricated units, substrates, areas, and conditions for compliance with requirements, installation tolerances, and other conditions affecting unit performance.

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

3.2 INSTALLATION

A. Install units in locations indicated. Unless otherwise indicated, install units with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

B. Comply with manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.

C. Align fabric pattern and grain as indicated on Drawings.

3.3 INSTALLATION TOLERANCES

A. Variation from Plumb and Level: Plus or minus 1/16 inch in 48 inches, noncumulative.

B. Variation of Joint Width: Not more than 1/16-inch variation from hairline in 48 inches, noncumulative.

3.4 CLEANING

A. Clip loose threads; remove pills and extraneous materials.

B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 098400

SECTION 100100 - MISCELLANEOUS SPECIALTIES

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. Provide all miscellaneous specialties work including but not necessarily limited to:
   1. Kiln, Kiln Vent and Drying Cabinet
   2. Knox Box
   3. Bike Rack
   4. Ground monument marquee sign
   5. AED cabinet

B. Related Requirements:
   1. Section 116623 “Gymnasium Equipment” for gymnasium equipment
   2. Section 123553.19 “Wood Laboratory Casework” for lab equipment not specified in this section
   3. DIV 23 - Mechanical services
   4. DIV 26 - Electrical services

1.1 QUALITY ASSURANCE

A. Provide materials and assemblies equal to grade or quality specified.

B. Installation shall be done in a workmanlike manner by skilled craftsmen and mechanics especially trained for type of work required.

C. Installer must examine substrates and conditions under which the equipment is to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected.

D. Provide templates and patterns with necessary accessories and duplicates to other trades when required for proper coordination.

E. Use of catalog numbers, and specific requirements set forth in Drawings and Specifications are not intended to preclude the use of any other acceptable manufacturer's product or procedures which may be equivalent but are given for purpose of establishing a standard of design and quality for materials, construction and workmanship.

1.2 SUBMITTALS

A. Submit manufacturer's specifications and installation instructions indicating compliance with Specification requirements.

B. Submit shop drawings and product data on each item. Show details of manufacture and installation details including connections with and relation to adjoining materials. Include roughing-in dimensions and characteristics of all mechanical and electrical services which are

required.

C. Submit samples as required for Architect's approval and for color and material selection. Architect's review will be for color and texture only; compliance with other requirements is the exclusive responsibility of the Contractor.

D. Make additional submittals required under the various following Articles.

PART 2 - PRODUCTS (INCLUDING PART 3 - EXECUTION)

2.1 MATERIALS

A. Provide materials as described under the various headings, which may be of manufacturer's standards where applicable to requirements given herein.

2.2 KILN

A. Kiln Description: The kiln should be automatic firing with firemate controls with a temperature of 2350 F. Electrical requirements include 208 volts, 3-phase, 52 amps and the dimensions should be 30-1/2 inches by 39-1/2 inches by 48 inches H. Other features may include: Delay fire and memory timer, Two layer heat shield with insulation to keep switch cool, Premium insulating firebrick heavy-duty elements, Dropped recessed brick grooves, Lock-in lid support, Fall away Prop-R-Vents for easy two-stage firing, Tapered peepholes, Dust free coating, Full firing capacity, Reversible brick bottom, Wide ventilated switch box, Long life electrical system, Heavy amperage cord set, Heavy galvanized steel base, Stainless steel case, Sturdy kiln stand, and Furniture Kit.

B. Product and Manufacturer:
   a. Super Dragon as manufactured by Paragon Industries, L.P., (800) 876-4328.
   b. Architect approved equal.

C. Kiln Vent:
   a. Reference Divisions 23 HVAC and 26 Electrical.

D. Kiln Drying Cabinet: The kiln room drying cabinet should be 48 inches wide x 24-1/4 inches deep x 84 inches tall with two hinged doors with louvers, five perforated shelves and one drip pan.

E. Installation: Install in accordance to manufacturer’s written instructions and in coordination with MEP documents. Provide all required components for a complete system installation.

2.3 KNOXBOX

A. Product and Manufacturer:
   a. Knox, Model 3200
   b. Architect approved equal

B. Type: Recessed with hinged door and UL listed Tamper Alert.

C. Installation: Install in accordance with manufacturer’s written instructions by manufacturer approved installer.

2.4 BIKE RACK

A. Heavy Duty Wave Bike Rack:
    a. Product and Manufacturer:
        i. Basis of Design: Model HW238 (9 loop - 11 person) by Belson Outdoors
        ii. Architect approved equal
B. Overall dimensions shall be 36" high x 2-3/8" wide x 111 7/8". Framework shall be fabricated from 2-3/8" O.D. 10 gauge galvanized pipe, AISI 1010 grade steel. Made to hold 11 bikes.
C. Mounting: In concrete, as indicated in Drawings, and per manufacturers recomendations.
D. Finish: Hot dipped galvanized.
E. Install per manufacturers written instructions.

2.5 GROUND MONUMENT MARQUEE SIGN

A. Ground Monument Marquee Sign:
    a. General: Comply with jurisdictional requirements and building codes.
    b. Materials: As indicated on Drawings.
B. Sign Cabinet;
    a. Size: As indicated on Drawings.
    b. Material: Aluminum, finish as indicated on Drawings.
    c. Sign Face: ¼-inch thick translucent white polycarbonate with cut-out for LED display panel.
    d. Cover Panel: ½-inch thick clear polycarbonate cover panel over entire face of sign and LED display.
    e. Fasteners: Stainless steel stand-offs to maintain required open area for LED panel cooling.
C. Text and Graphics:
    a. Material: Opaque vinyl film U.N.O.
    b. School Logo: As indicated on Drawings.
    c. Font: Trade Gothic Condensed
    d. Size and Color:
        i. School Name: 6-inches, finish as indicated
        ii. School Designation: 5-inches, finish as indicated
        iii. Dallas ISD Wordmark: 4-inches, Pantone 274-primary blue, translucent
    e. All text to be centered horizontally within overall sign width.
    f. Dallas ISD Wordmark to be centered vertically between the bottom of the LED display and the bottom of the sign face panel.
D. Base Structure:
    a. Provide base structure as indicated on Drawings.
E. Power:
    a. Provide power as indicated on Drawings.
F. LED Display:
    a. Manufacturer: Daktronics; G36 Series or DISD approved equal.
    b. Size: As indicated on Drawings. Maintain 4-inch minimum offset between edge of sign face and LED display.
    c. Approximate Active Area: 16.3 square feet
    d. Sides: two
    e. Colors: RGB, one red, one green, one blue
    f. Communications: Ethernet bridge radio, as indicated on Drawings.
G. Warranty:
    a. Five years on parts from date of substantial completion.
    b. One year on labor and materials on non-LED components from date of substantial completion.
H. Install per manufacturers written instructions.
I. Provide all anchorage, framing and supports for a secure installation.
J. Make all connections to control and power conduits.
K. Sealant all around base.

2.6 AED CABINET

A. Product and Manufacturer:
   a. Basis of Design Product: Subject to compliance with requirements, provide Zoll AED Plus Standard Size Semi-Recessed Cabinet with Audible Alarm by Zoll Medical Corporation.
   b. Architect approved equal

B. Semi-recessed with rolled edge.
   1. Formed door with 1-1/4" trim, mounted in a 5/8" door stop with zinc-plated handle and roller catch and continuous hinge.
   2. Provide AED decal on acrylic glazing and theft-deterrent lock.

C. Finish: White, powder coat

D. Installation: Install in accordance with manufacturer's written instructions by manufacturer approved installer. Mounting height and clearances to comply with Texas Accessibility Standards (TAS).

END OF SECTION 100100

SECTION 104413 - FIRE PROTECTION CABINETS

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. Fire-protection cabinets for the following:
      a. Portable fire extinguisher.
      b. Portable fire extinguisher, 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. DIV 21 for fire-suppression standpipes for fire-hose connections.

1.3 PREINSTALLATION CONFERENCE

A. Preinstallation Conference: Conduct conference at Project site.
   1. Review methods and procedures related to fire-protection cabinets, including, but not limited to, the following:
      a. Schedules and coordination requirements.

1.4 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-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. Samples for Verification: For each type of exposed finish required, prepared on samples 6 by 6 inches square.

F. Product Schedule: For fire-protection cabinets. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 CLOSEOUT SUBMITTALS

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

1.6 COORDINATION

A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers and fire hoses, hose valves, and hose racks indicated are accommodated.

B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: 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 E 814 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. Cabinet Type: Suitable for fire extinguishers and hose, rack, valve, and extinguisher.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
   1. Guardian Fire Equipment, Inc.
   2. JL Industries, Inc.; a division of the Activar Construction Products Group.
   3. Larsens Manufacturing Company.
   4. Nystrom, Inc.
   5. Potter Roemer
   6. Architect approved equal

C. Cabinet Construction: Fire rating to match partition types as indicated on Drawings.
   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.

E. Recessed Cabinet:
   1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
   2. At locations indicated on Drawings.

F. 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.
3. At locations indicated on Drawings.
4. Projections: Semi-recessed cabinets must comply with accessibility codes of authorities having jurisdiction.

G. Cabinet Trim Material: Aluminum sheet.

H. Door Material: Aluminum sheet.

I. Door Style: ~~Flush opaque panel, frameless, with no exposed hinges~~ Center glass 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. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
3. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
4. 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 door.
      2) Application Process: Silk-screened.
      3) Lettering Color: Red.
      4) Orientation: Vertical.
5. Alarm: Manufacturer's standard alarm that actuates when fire-protection cabinet door is opened and that is powered by low voltage, complete with transformer.

M. Materials:
1. Aluminum: ASTM B 221 for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
   a. Finish: Baked enamel or powder coat.
   b. Color: As selected by Architect from full range of industry colors and color densities.

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 valves, racks and cabinets to verify actual locations of piping connections before cabinet installation.

B. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.

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

3.2 PREPARATION

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

3.3 INSTALLATION

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 Cabinets: 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 semi recessed 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 Hose and Valve 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."

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

SECTION 114000 - FOODSERVICE EQUIPMENT
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including General and Supplementary Conditions and General Documents, apply to the Work specified in this Section.

1.2 SUMMARY OF THE WORK

A. Project Name and Location: Global College Academy (Prep-Frederick D. Haynes)
DALLAS, TX

B. Approval of Working Surface: any contractor performing work over the work of other contractors shall notify the Architect of any unsatisfactory conditions. Beginning of work by any contractor shall constitute acceptance of the previous work.

C. Checking Dimensions at Site: before ordering any materials or doing any work, verify all measurements of the building and be responsible for the accuracy of them. No extras will be allowed for variations from drawings in existing conditions or for work performed under this contract. Any discrepancies found shall be submitted to the Architect or Foodservice Consultant for instructions before proceeding.

D. Cutting and Patching: No excessive cutting will be permitted, nor shall any structural members be cut without the written approval of the Architect. Each Contractor shall leave all chases and openings straight, true and of the proper size in his work as may be necessary for the proper installation of his and other contractors' work. After such work has been installed, he shall carefully fit around, close up, repair, patch and point up same as directed, to the entire satisfaction of the Architect.

E. Cooperation: The General Contractor, all other contractors and all subcontractors shall coordinate their work with all adjacent work and shall cooperate with all other trades to facilitate the general progress of the work. Each trade shall afford all the other trades every reasonable opportunity for installation of their work and storage of their material.

F. Inspection and Tests: Architect, Owner, Foodservice Consultant and their representative shall at all times have access to the work whether it is in preparation or progress. Provide proper and safe facilities for such access and inspection.

G. Fees, Permits and Inspections: secure and pay fees for all permits, licenses and inspections as required by all authorities having jurisdiction. Give all notices and comply with all laws, ordinances, codes, rules, regulations and contract requirements bearing on the work.

1.3 SCOPE

A. Include the Work specified, shown or reasonably inferable as part of Foodservice Equipment. Portions of this Work may be subcontracted to those qualified to do such work, as may be necessary because of jurisdictional trade agreements and restrictions.

B. The General Contractor is responsible for Related Work specified in other Sections: i.e. final plumbing, electrical and mechanical connections. The Foodservice Equipment Contractor is responsible for all internal connections when specified.

C. Specifications and drawings have been prepared to form the basis for procurement, erection, startup and adjustment of all equipment in this contract. Plans and specifications shall be considered as mutually explanatory and work required by one, but not by the other, shall be performed as though required by both. Items required by one, but not by the other shall be provided as though required by both. Work shall be accomplished as called for in specifications and shown on drawings, so that all items of equipment shall be completely functional for purpose for which they were designed. Provide all necessary material, tools, equipment and labor required for the complete installation. When there is any discrepancy between drawings and specifications, bidders should seek clarification of any discrepancies from the Architect/Consultant prior to bidding.

D. Should the drawings disagree in themselves, or the specifications with the drawings, the better quality, more stringent, and/or greater quantity of the work or materials shall be completed without additional costs to the Owner.

1.4 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Slab depressions: reinforced concrete wearing bed and interior finished floor with coved base at prefabricated cold storage assemblies: Divisions 03/09.

B. Concrete or masonry platforms with finished top and coved base at perimeter, for raised setting of foodservice equipment: Divisions 03/09.

C. Slab depressions to receive stainless steel drain trench liner/grate assemblies (provided under this Section): Division 03.

D. Dwarf-wall at exposed front/ends of cafeteria serving counters with finish as selected by Architect.

E. Corner guards: Division 09 (Unless otherwise specified).

F. PVC or EMT Conduit with pull-wire and wide-sweep bends for refrigerant piping to remote foodservice equipment refrigeration systems: Division 22/26.

G. Empty EMT conduit with pull-wire and wide-sweep bends for interconnect cables between LAN and POS terminals, change-makers, pre-check units, printers, CPU's, etc.: Division 26.

H. Supply and exhaust fans for foodservice equipment and exhaust hoods: Division 23. All testing and balancing for rooms and exhaust hoods to be performed by mechanical contractor. Balance report for Foodservice Exhaust Hoods to be provided to FDP immediately upon completion (send to Dallas.Submittal@fdp.org) and must be submitted with O&M manuals.

I. Roughing in and final connection of mechanical, electrical, and plumbing systems to foodservice equipment and cold storage assemblies by Divisions 22/23/26.

J. Grease traps by Division 22.

K. Millwork /Casework Fixtures by Division 06.

L. Any wall penetration required for Foodservice Equipment utilities to be provided by G.C.. Escutcheon plates or stainless steel sleeves to be provided and installed by G.C. as needed.

M. Div. 23 to provide conditioned air above walk-in assembly.

1.5 QUALITY ASSURANCE

A. In addition to complying with all applicable laws, statutes, building codes and regulations of public authorities, comply with the following:

1. National Sanitation Foundation (all equipment to bear label).
2. National Electric Code.
3. Underwriters' Laboratories, Inc. (all applicable equipment to bear label).
4. American Gas Association Laboratories.
5. National Fire Protection Association.
6. Americans with Disabilities Act.
7. Food and Drug Administration HAACP Guidelines.
8. International Energy Conservation Code (IECC).
9. Department of Energy.
10. Environmental Protection Agency

B. Furnish certification of regularly manufactured equipment listing or classification by Underwriter's Laboratories, Inc. with initial submittal.

C. Furnish list of equipment and components (internal and external) that are not of domestic origin. All equipment and components (internal and external) should be of domestic origin when possible. This information should be provided with the initial submittal.

D. Projects outside the continental United States shall adhere to all local authorities having jurisdiction over that project.

1.6 SUBSTITUTIONS

A. Equipment items or components specified are intended to be the Basis of Bid. All other brands, including any additional names, which may be listed as "Alternates" or "Approved Equal," must conform with the specifications, size, accessories, function, etc. of the first-named brand and be subject to Paragraph C-03 of this Article.

B. Proposed Substitutions:

1. Submitted no less than 14 calendar days prior to Bid Date.
2. Submit proposed substitutions with catalog data and/or manufacturer's shop details indicating all modifications required to conform with specified brand.
3. List of deviations must include listing of equipment name, model number, accessories and features with deviation(s) noted for both specified and proposed alternate equipment. Equipment without listed deviation(s) will be considered to be furnished as specified.

C. Substitutions with prior approval:

1. Submitted on Bidder's letterhead attached to Proposal Form with individual additive/deductive amounts stipulated and the documentation required in Paragraph B02.
2. Owner reserves the right to accept or reject any or all substitution proposals before execution of Contract.

3. Provide all design/engineering services required to make adjustments in space, systems, utilities, etc. and pay all additional costs of utilities, construction or professional services that may be incurred due to the acceptance of any substitution.

D. All appliances within common group or category (e.g., refrigerators, kettles, ovens, etc.): same manufacturer.

1.7 INTERPRETATION OF DOCUMENTS

A. During Bidding: contractor's, supplier's or vendor's questions and comments pertaining to Construction Document's clarity or intent will be addressed by addendum.

B. Subsequent to Award:

1. Confirmation of Construction Document requirements will be provided by Clarification Bulletin.
2. Request for Information Bulletins submitted by Contractor: contain Contractor's proposed resolution.

1.8 WARRANTY

A. Provide a written warranty for a period of one year from the date of Substantial Completion, including extended four-year replacement warranty on compressor bodies.

B. Components of equipment subject to replacement prior to one-year's use (such as refrigerator door gaskets) and those items which may fail due to improper or inadequate periodic maintenance by the Owner/Operator (such as an uncleaned refrigeration system condenser) are not intended to be included within the scope of the Warranty.

C. Refrigeration Systems/Equipment: one-year free service available within twenty-four hours of notification.

D. Furnish three copies of a list of all equipment and their respective local service agencies, indicating the address, telephone number and name of person to contact. Whenever possible, the service agencies selected shall be factory-authorized for the equipment assigned.

E. Provide following for refrigeration systems/equipment, unless specified otherwise:
1. One (1) year free service available within twenty-four hours of notification, for refrigeration systems.
2. Provide five (5) year manufacturer's registered written replacement, warranty certificate, covering compressor bodies. Warranty to cover labor costs for first year.
3. Provide ten (10) year manufacturer's registered written replacement/repair, warranty certificate, covering walk-in panels. Warranty to cover defects in material and workmanship. Warranty to cover labor costs for first year.
4. Provide one (1) year parts and labor warranty for all parts of refrigeration system(s) and walk-in cooler(s) and freezer(s), not otherwise covered herein.

F. All above stated warranty periods are from date of Substantial Completion. All replacement parts due to a warranty call should be of same quality as the original. Replacement parts should be of a domestic origin where possible.

1.9 SUBMITTAL DATA

A. Special Requirements: the following are in addition to any general requirements given elsewhere in the Documents.

B. Submittal Requirements:

1. Kitchen Equipment Contractor to furnish all submittals via PDF, drawings to be scaled per General Specifications.
2. Foodservice Design Professionals requires 15 business days upon receival.

C. Submittals to be identified with the below listed file name structure:

i. 11 4000-1 EQUIPMENT BROCHURE
ii. 11 4000-2 EQUIPMENT ROUGH-IN PLANS
iii. 11 4000-3 CUSTOM FABRICATION
iv. 11 4000-4 SERVING COUNTER
v. 11 4000-5 EXHAUST HOODS
vi. 11 4000-6 COLD STORAGE ASSEMBLY
vii. 11 4000-7 REFRIGERATION
viii. 11 4000-8 BEVERAGE MERCHANDISER
ix. 11 4000-9 ADDITIONAL SUBMITTAL
x. 11 4000-10 ADDITIONAL SUBMITTAL

D. Submittal rough-in drawings to be submitted with equipment brochure. If not sent together, submittal will be rejected.

E. All FDP submittal comments will be notated in RED, architect, and general contractor to be colored per their direction.

F. If hard copy submittals are required, kitchen contractor to furnish all hard copies as required to the specified trades.

G. If discrepancies, missing information, or incorrect information occur within the documents, kitchen contractor to seek clarification or clearly notate on submittals the need for further direction. Kitchen contractor is to bid the higher of the discrepancy. Per General specifications (Section 1.3. Scope subparagraph D).

H. Brochure Format (for regularly-manufactured equipment and components):

1. Front and rear protective cover with labeled project name.
2. Brochure index: indicate functional Area/Room number, item number, quantity, description and manufacturer.
3. A separate flysheet for each component or item of equipment, indicating: item number, name, quantity, manufacturer, optional equipment, modifications, special instructions and utility requirements. An item of equipment or assembly containing more than one buyout sub-assembly or component shall have the secondary item listed in parenthesis beside the primary item name. For example: Serving Counter (hot food well).
4. Catalog specification sheet and manufacturer's drawing.

I. Shop Drawings (Rough-In Drawings):

1. Separate drawing sheets: same size as Contract Drawings (Contract Drawings are not to be traced or reproduced). Submittal drawings are to be provided by Kitchen Equipment Contractor and not reproduced from Contract Documents. Any reproduced submittal drawings will be rejected.

2. ¼" scale drawing of fixed/movable Foodservice Equipment and pre-fabricated Cold Storage Assemblies with itemized schedules.
3. Special Conditions Drawings, sizing and locating the following conditions:

    a. Slab depressions, cores, sleeves or block-outs (cold storage assemblies, drain trenches, piping, etc.).
    b. Concrete or masonry platforms.
    c. Pipe sleeves or roof jacks.
    d. Wall-openings or block-outs for pass-through equipment, recessed control panels, in-wall fire-protection system components, etc.
    e. Blocking grounds or anchor plates required in walls for equipment support/attachment.
    f. Above-ceiling hanger assemblies for support of exhaust hoods, utensil-racks, etc.
    g. Access panels in walls or ceiling for service of equipment.
    h. Ceiling pockets or recesses for unusually high equipment.
    i. In-wall carriers for wall-hung or cantilevered equipment.

4. Electrical rough-in drawing.
5. Plumbing/mechanical rough-in drawing.
6. Required information:

    a. All fixed and movable Foodservice Equipment shown on Contract Drawings.
    b. All prefabricated Cold Storage Assemblies and Conveyor/Dishtable Assemblies shown on Contract Drawings.
    c. All general-use and convenience utilities or services indicated on Contract Drawings, including those required by or connected to equipment or devices not in this Section.
    d. All rough-in drawings: fully dimensioned from engineering benchmark (column lines, when provided) and finished-room surface to point of stub-up through floor and stub-out through wall or ceiling for all mechanical, electrical and plumbing services.
    e. Connection number/tag system and symbols: identical to Contract Drawings.

J. Shop Drawings (Manufacturer's and Fabricator's):

1. Sheet Size: identical to Contract Drawings, drawn or plotted at ¾" scale for plan view and elevations; 1½" scale for sections and construction details.
2. Included information: item number, name and quantity.
3. Construction details, sections and elevations to reflect requirements of the Specifications and Drawings.
2. Indicate adjacent walls, columns and equipment.
3. Indicate plumbing and electrical schematic drawings for equipment such as: conveyors, waste systems, self-cleaning exhaust hoods, exhaust hood fire protection systems and fabricated fixtures with single electrical or plumbing connection.
4. Mechanical or electrical operating components or products integrated into a fabricated fixture: ventilation and service access required or recommended by the manufacturer, including panel size and location to permit easy lubrication, adjustment or replacement of all moving parts.

K. All equipment and engineering rough-in plans sheet numbers are to match the contract documents. All equipment item no.'s and engineer item no.'s located on the schedules are to match the contract documents. All engineering requirements are to be updated as required to accommodate the provided equipment and/or match the contract documents. The Kitchen Contractor is responsible for the coordination of any MEP revisions to

accommodate the provided and proposed equipment. The kitchen contractor is responsible for any costs associated with equipment substitution.

L. FDP drawings and schedules are not to be copied in anyway. Any replicated drawings of FDP will be rejected.

1.10 SERVICE MANUAL

A. Format and Delivery

1. Provide complete service manuals in digital format at completion of installation (refer to "Submittal Data").
2. Acceptable formats: searchable, bookmarked PDF files. If the scope of the project requires multiple volumes, organize each volume into a separate PDF.
3. Provide separate manuals as required for each independent area within the project scope (Main Kitchen, Culinary, Concession, etc.).
4. Deliver one (1) cloud-hosted copy (with controlled access) and three (3) copies on USB flash drives or other commonly supported portable digital media for Owner's permanent record.
5. Optional Hard Copy: Upon Owner's request, provide three (3) bound sets in 1-1/2" hardback, three-ring binders (as many volumes as required). Hard copies shall mirror the digital manual content.

B. Maintenance of Finishes

1. Each manual shall include a section dedicated to care and maintenance of finish materials (e.g., stainless steel, plastic laminates, FRP, Plexiglas, quartz, solid surface, etc.).

C. Product Data

1. Include catalog specification sheets and/or approved shop drawings for each item.

D. Equipment Support

1. Authorized Service Agents
    - Provide a listing of authorized service agents for each manufacturer represented in the project.
    - Include company name, contact person, service area, address, phone, email, and 24-hour service number (if available).
2. Warranty Information
    - Provide manufacturer's warranty certificates for all equipment.
    - Clearly state warranty terms, including start date, duration, and scope of coverage (parts, labor, compressor-only, etc.).
    - Provide warranty service procedures and contact information for claims.
    - Include extended warranty options (if available) and instructions for enrollment.
3. Parts and Replacement Data
    - Provide illustrated parts breakdowns (where available).
    - Include replacement part numbers, descriptions, and recommended stocking quantities.
    - Include general contractor and kitchen contractor. Provide contact name and phone numbers.

E. Instructional Media

1. Provide digital instructional media (e.g., MP4 or other common video format) demonstrating operation, maintenance, and service of equipment.
2. Embed links to videos within the PDF manual and provide standalone media files for Owner's training library.
3. Where practical, include QR codes linking to digital resources (videos, web-based manuals, or manufacturer portals) for quick mobile access.

F. Organization

1. Internally subdivide PDF contents with digital bookmarks and logical tabbing organized by equipment item number or manufacturer name.
2. Each tab shall be clearly titled, consistent, and searchable.
3. For hard copy binders (if requested), provide permanent page dividers with reinforced laminated plastic tabs clearly titled.

G. Electronic Submissions

1. Electronic manuals must follow the formatting and organizational standards listed above.
2. Cloud delivery must include user permissions, version control, and permanent Owner access.
3. General electrical submission to be sent to FDP for revised approval.

H. As-Built Drawings

Provide complete As-Built Drawings for the following systems:

- Updated Equipment plan.
- MEP rough-ins.
- Refrigeration systems, Shop drawings.
- Kitchen hoods and counters shop drawings.

2. As-Built Drawings shall include:
   - Final, field-verified installation layouts with accurate dimensions.
   - All deviations from contract drawings, clearly identified.
3. Deliverables:
   - Digital format (searchable PDF and CAD files where available).
   - Cloud-hosted copy with controlled access, coordinated with service manuals.
   - Hard copy (if Owner requests) incorporated in the Service Manual binders.
4. Purpose:
   - Provide the Owner with accurate documentation for future maintenance, troubleshooting, equipment reuse, or remodel projects.
   - Ensure clear reference for wiring, rough-ins, and modifications to cold storage and refrigeration systems, which historically present the highest rate of Owner maintenance and replacement.

1.11 VERIFICATION AND COORDINATION OF PROJECT / DATA

A. Utilities Rough-in Drawings and Field-Services within four weeks after receipt of notice-to-proceed, review Contract Drawings and Submittal Data for accuracy and completeness and notify Architect of conflicts and proposed adjustments. Coordinate work with other sub-contractors.

1. KEC to provide on-site field verification of all underground utilities prior to pouring of concrete for capacity and location, coordinate with General Contractor. Submit review to Architect and General Contractor.

2. KEC to provide on-site field verification of all other utility connections and locations, coordinate with General Contractor. Submit review to Architect and General Contractor.

B. ON-SITE INSPECTION REPORTS

1. Prior to concrete pour. (KEC to submit a copy of the report below to the Architect, General Contractor and Foodservice Consultant within 24 hours of the inspection.)
2. Prior to delivery of equipment. (KEC to submit a copy of the report below to the Architect, General Contractor, and Foodservice Consultant with-in 24 hours of the inspection.)

On - Site Inspection Report
Prior to Concrete Pour

Inspection Date_____ **Project Name**_____

Project Location_____

Inspector's Name_____ **Company**_____

Inspector's Contact Number_____ **Email** _____

Architectural Firm_____ **Project Architect**_____

Architect's Contact Number_____ **Email** _____

General Contractor_____ **Project Manager**_____

G.C. Contact Number_____ **Email** _____

Foodservice Consultant **FDP** **Project Manager**_____
Consultant Number - Dallas **972-245-5300**
Consultant Number - Houston **281-350-2323** **Email** _____

An on-site Inspection to verify the location of underground utilities was conducted on this date. The following conditions were observed and brought to the attention of the General Contractor. (KEC is to provide a written description and copy of the Utility Plan indicating the corrective action required).

1. What difficulties were encountered?

Inspector's Initials _____

This Inspection Report is the responsibility of the Kitchen Equipment Supplier and the General Contractor. Coordination between the two parties is mandatory. *Neither the Architect nor the Kitchen Consultant need to be present at any of the inspections*.

EMAIL A COPY OF THIS REPORT AND ANY ADDITIONAL INFORMATION TO THE ARCHITECT, GENERAL CONTRACTOR AND FOODSERVICE CONSULTANT.

On - Site Inspection Report
Prior to Delivery of Equipment

Inspection Date_____ **Project Name**_____

Project Location_____

Inspector's Name_____ **Company**_____

Inspector's Contact Number_____ **Email** _____

Architectural Firm_____ **Project Architect**_____

Architect's Contact Number_____ **Email** _____

General Contractor_____ **Project Manager**_____

G.C. Contact Number_____ **Email** _____

Foodservice Consultant **FDP** **Project Manager**_____
Consultant Number - Dallas **972-245-5300**
Consultant Number - Houston **281-350-2323** **Email** _____

An on-site Inspection to verify the location of installed utilities was conducted on this date. The following conditions were observed and brought to the attention of the General Contractor. (KEC is to provide a written description and copy of the Utility Plan indicating the corrective action required).

1. What difficulties were encountered?

Inspector's Initials _____

This Inspection Report is the responsibility of the Kitchen Equipment Supplier and the General Contractor. Coordination between the two parties is mandatory. *Neither the Architect nor the Kitchen Consultant need to be present at any of the inspections.*

EMAIL A COPY OF THIS REPORT AND ANY ADDITIONAL INFORMATION TO THE ARCHITECT, GENERAL CONTRACTOR AND FOODSERVICE CONSULTANT.

C. Review critical systems/components for application, performance and capacity and submit calculation worksheets with initial submission of brochure/rough-in drawings, with all proposed adjustments noted, including:

1. Exhaust hood removal/supply air volume, velocity, static pressure, duct collar sizes and locations.
2. Refrigeration Systems (compressor, condenser and evaporator) capacities/sizes, quantities and refrigerant piping distances/sizes.
3. Exhaust Hood Fire Suppression Systems (nozzle locations, air handler and fuel interlocks, piping/distance limitations).
4. Locations of Vacuum Breakers.
5. Conformance of Refrigerated Components/Equipment with HACCP Guidelines (e.g., salad/sandwich pans, upright/open refrigerator cabinets, salad bars) with HACCP Guidelines.
6. Gas, water line sizes and manifold configurations.
7. Diameter and length of flexible connector lines for fixed/movable gas appliances.
8. Fabricated Equipment load center panels (individual and total amperage calculations and circuit balance).
9. ADA compliance of workstations, service positions, passageways, etc.

D. Ceiling mounted appliances/fixtures: verify and coordinate dimensions/location of support framing/hangers with General Contractor. All material and installation below 12'-0" aff.: Section 11 4000.

E. Dimension Responsibility: obtain actual or guaranteed measurements for proper fit of equipment. All dimensions indicated in Contract Documents are approximate and are as accurate as can be determined at the time. Field-check all horizontal/vertical measurements and conditions at the building prior to fabrication or delivery of equipment and notify the Architect of all conflicts or deviation from the dimensions shown.

F. Checking Dimensions at Site: before ordering any materials or doing any work, verify all measurements of the building and be responsible for the correctness of them. No extras will be allowed for variations from drawings in existing conditions or for work performed under this contract. Any discrepancies found shall be submitted to the Architect for instructions before proceeding.

G. Scheduling to Fit Openings: should it become necessary to schedule construction of walls or partitions prior to delivery of fixed equipment, the equipment must be fabricated for passage through finished openings. Maintain close contact with the project and be cognizant of all conditions, including vertical handling limitations within the building (elevator cabs or openings, stairs, etc.) and possible hoisting requirements. Coordinate all procedures with General Contractor and Project Team.

H. Refrigerated and Dry Storage Areas: verify and coordinate dimensions to accommodate scheduled modular shelf sections. Notify Architect of variance between the Contract Documents and actual conditions.

I. Color/Pattern Selections: submit selection samples of solid polymer products, plastic laminate, paint or stain finishes and vinyl-coated surface material of equipment as selected by Owner.

J. Movable Equipment Interface: rolling stock (pan racks, carts, dollies, dish/tray/rack dispensers) required to fit through or into fixed equipment (roll-in refrigerators, counter

bodies, etc.) is to be reviewed and coordinated for compatibility at time initial of shop drawing submittal. Indicate conflicts and proposed adjustments.

K. Relocation of Work: relocate or re-route work as required to coordinate related items free of charge if no extra work is involved.

L. Contractor must provide an Itemized Schedule of Values that correlates with the foodservice equipment item numbers for verification *prior to submittals being submitted*.

1.12 EQUIPMENT FURNISHED / INSTALLED BY OTHERS

A. Obtain and coordinate utility requirements of Owner-Furnished/Owner-Installed (OF/OI) equipment with the building utilities and roughing-in drawings/provisions.

B. Coordinate physical data of OF/OI appliances or equipment and incorporate information into Submittal Drawings. Vendor- or Purveyor-Furnished equipment (e.g., coffee/tea equipment): same as OF/OI.

1.13 WORK INSTALLED BUT FURNISHED BY OTHERS

A. Coordinate delivery/installation schedule of Owner-Furnished/Contractor-Installed (OF/CI) equipment with Owner not less than ninety (90) days before equipment requirement.

B. Obtain and coordinate utility requirements of OF/CI equipment with the building utilities and roughing-in drawings/provisions.

C. Receive at job-site and fully incorporate into installation procedures as if furnished under this Section.

PART 2 - PRODUCTS

2.1 FABRICATED FIXTURES MATERIAL / COMPONENTS

A. Stainless steel sheets or shapes: 18-8, Type 302, polished to 180 grit No. 4 finish.

1. Stainless steel joints and seams: heli-arc welded, free of pits and flaws, ground smooth and polished to No. 4 finish.
2. The “grain” direction of horizontal stainless-steel surfaces: longitudinal, including the splashback. The polishing procedure at right-angle corners of fixtures shall provide a mitered appearance.

B. Galvanized Iron Sheets: Armco copper bearing Zinc Grip or Zinc Grip/Paint Grip.

1. Galvanized iron joints and seams: arc-welded, free of pits and flaws and ground smooth.
2. Galvanized sheets or shapes: washed with mineral spirits and painted with Rustoleum gray semi-gloss enamel.

C. Sound Deadening: Schnee Butyl Sealant ½” wide rope positioned continuously between all frame-members or contact material and underside of stainless-steel surface (sinks, table tops, food wells, overshelves and undershelves). Tighten stud-bolts for maximum compression of sealant and trim excess.

D. Plastic Laminates: color/pattern selected by Architect, in 1/16" thickness for flat surfaces: 1/32" thickness for radiused surfaces. Plastic laminates and adhesives must be N.S.F. approved (Standard No. 35).

E. Solid Polymer products: color/pattern/material as selected by Architect in thickness as specified. Solid Polymer and adhesives must be N.S.F. approved (Standard No. 51).

F. Casters.

1. Fabricated fixtures with "Open Base" construction: Jarvis and Jarvis Model No. 5-405-113P-NSF swivel casters with grease seals on forks and wheels; Zerk fitting in swivel; two casters: Model No. E-75 Vertilock brakes. All casters: B-7" rolling bumpers with stainless steel top discs.

G. Cutting Boards: 1/2" thick Read Products, Inc. "Richlite" cutting board, size as indicated.

H. Identification Plates, Labels, Tags:

1. Prohibited Information: names of suppliers, fabricators and contractors.
2. NSF Labels: required on all pieces of equipment.
3. Required Information: function or purpose of controls such as display light switches, food warmer controls, etc.
4. Plate Construction: engraved phenolic plastic, secured to equipment with epoxy cement or stainless-steel screws. Furnish samples.

2.2 PLUMBING / MECHANICAL REQUIREMENTS

A. Plumbing Fittings and Components: furnished under this Section as follows:

Note: Fitting and components described in Items 1, 2, 3,4 and 5 are furnished loose for installation by Division 22.

1. Control valves, appliance pressure regulators for water, gas and steam, and vacuum breakers: wherever required on Foodservice Equipment (chrome-plated where exposed).
2. Faucets and drains without connected overflows (unless otherwise indicated) for all sinks.
3. Specialty Foodservice water-fill faucets or hose assemblies indicated in drawings/specifications.
4. Wade Model No. W-10 Shock-Stop shock absorbers for all Foodservice Equipment with quick-opening or solenoid-operated water valves.
5. Dormont Stainless Steel Water Quick Disconnect hose, diameter per water connection size requirements, with SafetyQuick safety fitting, w/coiled restraining device, full port ball valve, antimicrobial coating, lifetime warranty.
6. Extensions of indirect waste fittings to open-sight floor sink or floor drains from sinks, under bar equipment, and food-holding components of serving counters (e.g. cold pans, hot food wells, refrigerator/freezer coils not equipped with condensate evaporators) furnished and installed by Division 22. Drains: painted with aluminum paint where exposed, type "K" copper where concealed.
7. Piping brackets and supports beneath/within fabricated equipment.
8. Closed Base Bodies: removable 18-gauge stainless steel closure panel at plumbing penetrations, under top.
9. Control valves on Open Base fixtures: mounted on 14-gauge stainless steel gusset-shaped panel with 3½" setback from counter top edge/rim to face of control handle.

10. Fill hose/faucet at support pedestals or Closed Base Body: installed in a 15” x 18” x 5” deep recessed mounting panel. Panel bottom: sloped on a 60o angle, with 3/8” stainless steel rod hanger-bracket for hose.
11. In-line water filter system:
    a. Everpure System filters for coffee/tea brewers, icemakers, water chillers, convection steamers and beverage systems. Sized per manufacturer recommendation.

B. Gas-Heated Equipment Fittings and Components: furnished under this Section as follows:

1. Fixed Equipment: Dormont MFG brand “KITCF” Series gas hose kit with Quick Disconnect fitting at appliance. Approved equal: T&S Brass. Diameter per fuel volume/connection size requirements. Gas valve diameter size per fuel volume/connection size requirements.
    a. Restraining device: heavy duty steel cable, fastened to equipment and walls, 3” to 6” shorter than equipment connector length.

C. Final Plumbing Connections Provisions.

1. Fabricated equipment containing components, fittings and/or devices indicated on Foodservice Connection Drawings to be connected to the building systems: each component, fitting or group thereof pre-piped to a utility compartment for final connection by Division 22. Refer to drawings for capacities.
2. Field-assembled equipment (e.g., prefabricated walk-in refrigerator/freezers, exhaust hoods, warewash machines, convection ovens, etc.): plumbing components completely interconnected under this Section for final connection arrangements indicated on Utility Connection Drawings.
3. All plumbing final connection points of equipment shall be tagged, indicating:
    a. Item number.
    b. Name of devices or components.
    c. Type of utility (water, gas, steam, drain, chilled water).

D. Ducts and Vents.

1. Exhaust hoods which are furred-in to ceiling: 2” high duct collar for final connection to duct system.
2. Warewash machines equipped with integral vent cowls or extended hoods: furnished with 18-gauge stainless steel seamless duct risers to 6” above finish ceiling for final connection. The duct: trimmed at ceiling with 16-gauge stainless steel angle flange with all corners welded.

2.3 FOODSERVICE EQUIPMENT REFRIGERATION SYSTEMS

A. Install complete with all refrigerant, oil, dials, dehydrators, gauges, controls required for the proper operation of the system.

B. Self-contained or factory-installed compressors: check and adjust to proper operating temperature prescribed by FDA/HACCP.

2.4 PLUMBING TRIM

A. Faucets: furnished for all sinks or equipment requiring open water supply.

B. Fill Faucets: furnished for appliances requiring open water supply.

C. Drain Fittings: furnished for all sinks or equipment requiring removal of liquids. Install specified chrome-plated or stainless-steel fittings in die-stamped openings with washers and locknuts. Solder may be used as a sealer but shall not be applied to the top surface of the drain fittings.

2.5 ELECTRICAL REQUIREMENTS

A. All electrical systems, components and accessories within the work of this Section: certified to be in accordance with NEC 70.

B. Electrical Fittings and Components: furnished under this Section as follows. Coordinate foodservice equipment loads, voltage and phase with building system and confirm any existing or OF/OI equipment requirements.

C. Cord and Caps.

1. Coordinate all Foodservice Equipment cord/caps with related receptacles.
2. All 120 volt “plug-in” equipment shall have Type SO or SJO cord and plug with ground wire fastened to frame/body of item.
3. Cord lengths for fixed equipment: adjusted to eliminate loose-hanging excess.
4. All non-fixed plug-in “buy-out” equipment: Hubbell configuration, ratings as required.
5. All mobile electrical support equipment (heated cabinets, dish carts, etc.) and counter appliances mounted on mobile stands (mixers, food cutters, toasters, coffee makers, microwave ovens, etc.): 8’-0” cord length with cord-hanger strap secured to rear of equipment or mobile stand.

D. Switches and Controls.

1. Each motor-driven appliance or electrically heated unit: equipped with control switch or starter per Underwriters’ Laboratories, Inc. with low-voltage and overload protection.
2. Disposer controls recess-mounted in wall: external fittings and accessories removed from enclosure and furnished with 16-gauge stainless steel perimeter angle flange with welded corners. Install control at 4’-0” aff to bottom of enclosure.
3. Disposer controls recess-mounted in counter-splash risers: external fittings and accessories removed from NEMA 4 enclosure and furnished with 16-gauge stainless steel perimeter angle flange with welded corners. Install control at 3’-0” aff to bottom of enclosure. Provide panel with 60” long coil of Seal-Tite electrical conduit, from bottom of control panel for final field connections under Division 26.
4. Equipment which is not provided with built-in circuit breakers or fused terminal block and is indicated on Utility Connections Drawings to be directly connected to the building electrical system: a NEMA 4 stainless steel disconnect switch furnished and installed by Division 26.
5. All remote manual starters, disconnect switches, magnetic contactors or starters and push-button stations: NEMA Type 4 enclosure; NEMA Type 1 enclosure only when installed in a Closed Base Body.

E. Heating Elements.

1. Electrically heated equipment: thermostatic controls.
2. Water heating equipment: equipped with positive low water shut-off.

F. Receptacles and Switches.

1. Receptacles installed in vertical panels of support pedestals or Closed Base Bodies: installed in 12" x 8½" x 3" deep recessed mounting panel sloped on 60o angle and turned up to top of opening.
2. Pre-wire receptacles in closed base fixtures to a junction box installed within 6" from bottom of utility or compressor compartments.
3. Receptacles mounted on Open Base fixtures: installed on 12" x 10½" x 4½" deep 14-gauge stainless steel panel with returned ends and sloping recess. Secure panel to underframe of fixture top.
4. Pre-wire receptacles on open base fixtures to a junction box secured to a leg or mounted on underside of lower shelf. Vertical runs of wiring: made in rigid conduit or within the tubular leg.
5. Receptacles installed in/on-fabricated equipment: Hubbell, Inc. assemblies horizontally mounted in a metal box with stainless steel cover plate.
6. Switches installed in/on-fabricated equipment: Hubbell, Inc. with metal box and stainless-steel cover plate. Switches: pre-wired to the controlled device and to a junction box installed within 6" from bottom of utility or compressor compartment. All refrigeration system switches: installed within the compressor compartment near the door opening.
7. Load centers installed in/on fabricated equipment to have all fixture components pre-wired to load center with balanced phase loading. Load center: ready for final connection by Division 26 and flush-mounted within utility compartment rear panel, set back 8" from access door. All breaker/device information: typewritten on circuit schedule in load center door (number corresponding breaker/device) with enclosed schematic wiring diagram of fixture components.
8. All receptacles to be pre-wired to cord and plug assembly and routed through overshelf post at all island equipment locations, unless specified otherwise.

G. Light Fixtures.

1. Light fixtures with lamps installed in/on fabricated or field-assembled equipment: pre-wired to a junction box for final connection (continuous-run fixtures when indicated).
2. LED Display Light: install light fixtures full-length of Display Stand and Serving Shelf with stud bolts and pre-wire through support posts to an apron-mounted switch.
3. Heat Lamps: installed to underside of serving shelf assemblies. When multiple 24" heat lamps are specified, provide maximum length heat lamp chassis. Install all switches remote from lamps.
4. Cold Storage Light Fixtures: Furnished by Section 11 4000 and installed by Div. 26. All electrical wiring and conduit provided by Div. 26. electrically connected through the Vapor Proof light fixture base connection, located on the interior door header. Door frame wiring stubs out top of panels 8" in flexible conduit for final connection by electrical contractor. All horizontal conduit: above ceiling panels. Install plastic sleeve through ceiling panels for electrical conduit. Seal sleeved penetrations airtight at both sides of panel. All penetrations to be sealed by Kitchen Equipment Contractor. All Cold Storage light fixtures to be LED.

H. Final Electrical Connection Provisions.

1. Fabricated equipment containing electrically operated components or fittings indicated on Utility Connections Drawings: direct-connected, with each component, fitting or group pre-wired to a junction box for final connection by Division 26. Refer to drawings for circuit loading.
2. Fabricated equipment containing electrically operated components and/or devices indicated: circuit-breaker load center with each component or device pre-wired to a separate circuit breaker for balanced phase loading and single final connection by Division 26.

3. Field-assembled equipment (e.g., prefabricated cold storage assemblies, exhaust hoods, warewash machines, etc.) shall have electrical components completely interconnected in this Section for final connection arrangements as indicated on Utility Connection Drawings by Division 26.
4. Pre-wire the following groups of cold storage assembly electrical devices to a top-mounted junction box for final connection by Division 26 per compartment grouping (unless otherwise indicated).
    a. Light fixtures and switches; heated pressure-relief vent.
    b. Door/jamb heaters.
    c. Evaporator fans, defrost elements, and drain line heaters.
5. All electrical final connection points of equipment shall be tagged, indicating:
    a. Item number.
    b. Name of devices on circuit.
    c. Total electrical load.
    d. Voltage and phase.

I. Lamps: in all Foodservice Equipment containing light fixtures. Refrigerator or heated cabinets: All exposed LED lamps above or within a food zone: Shat-R-Shield lamps or standard lamps, sleeved with end caps.

2.6 CUSTOM - FABRICATED / ASSEMBLED UNITS

A. Mechanical or electrical operating components or products integrated into a fabricated fixture: ventilation and service access required or recommended by the manufacturer. The service access panel(s) size and placement is to permit easy lubrication, adjustment or replacement of all moving parts and is to be indicated on fabrication shop drawings.

2.7 BAKER TABLE TOPS (Unless specified otherwise)

A. 14-gauge 304 S/S top with 2” square turn down at front, 6” high enclosed splash at three (3) sides and rear. Brace same as “Counter/Table tops”.

B. 1¼” x 6” high integral coved riser at rear and ends unless indicated otherwise on drawings.

C. 16-gauge stainless steel flour-trough at free long sides, secured to underside of top. Trough: 3” diameter with eased edges/corners.

2.8 COUNTER / TABLE TOPS

A. 14-gauge stainless steel; all free edges turned down 2” with ¾” tight hem at bottom. Free corners: rounded on ¾” radius.

B. Marine edges: turned up ½” on 45º angle and turned down 2” with ¾” tight hem at bottom.

C. Cafeteria serving counter tops at hot food stations: full-length x 3½” x ½” high raised rail at (customer’s) front side with 45º integral turndown to counter surface.

D. Tops abutting high fixtures or walls: cove up specified height and slope back 1½” at top on 45º angle; 2½” slope where piping occurs. Turn down 1” at rear of splash and close ends to bottom of top turndown. Secure splash turndown to wall with 4” long 14-gauge stainless steel “Z” clip anchored to wall, 36” o.c.

E. Freestanding tables and all serving counter splash-risers: turned back on 90º angle with 1” turndown at rear.

F. Brace tops with rigid-welded 1½" x 1½" x 1/8" galvanized steel angle frame at perimeter with cross bracing 2'-0" o.c. maximum. Provide 4" x 4" x 12-gauge stainless steel triangular pads where leg gusset welds to frame. Paint entire frame with Rustoleum gray semi-gloss enamel. Angle frames: secured to underside of top surfaces with ¼" studs welded 9" o.c. maximum with chrome-plated washer, lock washer and capnut. Studs: such length that cap nuts can be made-up tight, bringing top down snugly on angle frame eliminating all vibrations or "oil-canning".

G. Tops: 1½" overhang at free sides of underframe or Closed Base Body.

H. Mockett Model No. SG5-26 chrome-plated/plastic grommet assembly or integrally welded stainless-steel flange or inverted gusset where service utilities or support posts penetrate or abut tops, ground and polished to match top. When conditions permit, provide a 1" x 1½" rectangular opening in the backsplash for service utilities in lieu of piercing the horizontal surface. Install stainless steel split-tubing at raw-edge of opening.

I. Extend underbracing members to wall, turn down 6" and anchor to wall when specified to be mounted on leg/bracket assembly.

J. All openings in tops: 3/16" high raised die-formed edges.

K. All top openings for pans or inserts: 20-gauge stainless steel, watertight liners, 8½" deep, secured to underside of counter top.

L. All "built-in" and "drop-in" counter equipment/appliances: with framing members at perimeter of opening.

M. Scrap Container: 18-gauge stainless steel construction 6½" x 6½" x 21¾" long. Top of container: 5/8" wide x ¼" high full perimeter flange with ¼" diameter stainless steel rod bail handle. Interior vertical corners coved on ½" radius. Counter top: fitted with 6¾" square die-stamped opening.

2.9 COLD PANS

A. 14-gauge stainless steel with ¾" coved interior welded integrally to counter top with 3/16" raised edge at perimeter of opening. Depth of Cold Pan: NSF 7 compliance.

B. Slope bottom to required quantity of Component Hardware Model No. E16-4021 drain fittings at 48" o.c. maximum. Sleeve through insulation at drain fittings and extend common drain line into utility compartment for indirect waste connection.

C. ½" o.d. copper refrigerant lines in serpentine patter, 1½" o.c. flattened for maximum contact. Secure tubing to underside of ¼" thick aluminum "distribution plate" installed tight to underside of frost plate area and apply cold-conductive mastic to all surfaces.

D. Component Hardware Model No. E16-4021 drain fittings at 48" o.c. maximum, sleeved through insulation with common drain line extended into utility compartment.

E. Heat Cable: low-wattage, full-perimeter, below counter top at edge of depression. Secure with "Z" clips, 9" o.c. and interwire with compressor switch for simultaneous operation.

F. Enclose sides and bottom of pans with airtight 18-gauge galvanized jacket and pack with 2" fiberglass insulation set in mastic.

G. Compressor: size as indicated or required to accommodate size of cold pan. Locate compressor in compressor compartment below unit or as indicated on drawings.

H. Sectional 16-gauge stainless steel perforated false bottom (¼" holes, @ ¾" o.c.). Turn down 1½" all sides, weld corners and provide finger rings. False bottom sections: 24" long maximum.

2.10 DRAWERS

A. Liners: Component Hardware Model No. S80-2020 (20" x 20"), easily removable with drawer in fully extended position.

B. Drawer Frame: 16-gauge stainless steel flanged out at top. Weld the frame to double-paneled 16-gauge stainless steel drawer front with full-length recessed pull at top (similar profile as Garcy Model No. R-1060) with closed ends.

C. Channel-formed horizontal pull: ¾" turndown at front and ends with ½" tight hem. Front edge of pull: flush with face of drawer. Recess behind pull: sloped up on 60o angle, terminating 1" below bottom edge of pull.

D. Mount drawer frame on Component Hardware Model No. S52-2020 self-closing slides, with Delrin bearings, full-depth of fixture. Secure slides to body or brackets to eliminate lateral movement in extended position. Refrigerator drawers: Component Hardware Model No. S52-2024 stainless steel slides with Delrin bearings.

E. Drawer enclosure in an Open Base Fixture: 18-gauge stainless steel flanged out at top for attachment to underside of table top. Lower edge of enclosure is flanged in toward open bottom. Mount drawer slides to enclosure and brace as required. Face of enclosure is to be same length and height of drawer face. Provide ¾" deep offset in front of enclosure and 2½" from underside of table top for flush-fitting appearance. Drawer enclosure on freestanding fixture: full-depth of table framing.

F. Drawer enclosure in a Closed Base Fixture: completely partitioned from adjoining area. Drawer front: flush-fitting with face of body.

G. Drawer Liners other than tool/utility: Bread Drawer: Component Hardware Model No. S83-2020; Refrigerated Drawer: Component Hardware Model No. S81-1520 stainless steel liner.

H. Cash Drawer: integral stainless-steel body, 3" deep.

2.11 FOOD WELLS (UNLESS SPECIFIED OTHERWISE)

A. Food Warmer Controls: remote-mounted in sloping recessed apron panel. Control panel is recessed 2½" from bodyline at top of 60o slope, 1" at lower edge. Terminate slope angle 2½" below counter top. Mount panel on concealed piano hinge at bottom edge; secure with screws at upper corners.

B. Manifold all warmer drains and extend to within utility compartment for indirect waste connection. Install valve in drain line and extend handle through compartment door.

C. Removable 18-gauge stainless steel closure panel at underside of warmers.

D. 14-gauge stainless steel plate/utensil shelf full-length of hot food station unless noted otherwise: 10" below counter top x 9" deep, with rear panel coved up to underside of

counter top; end panels turned up square. Front of shelf: turned down 1½" and returned under for closure panel attachment.

E. Food wells: Hatco Model No. HWBIBRT-FULD insulated food warmer (1200 watts, 208 volts, single phase) secured to underside of 12" x 20" die-stamped counter top openings with thermal breaker mastic rope applied at perimeter of food well flange.

F. Soup Warmers: Hatco Model No. HWB-11QTD soup warmer secured to underside of 11" diameter die stamped counter top opening with thermal breaker mastic rope applied at perimeter of soup well flange. Maximum allowable temperature of counter top at contact surface: 120oF. Each warmer: equipped with one 11-quart stainless steel round insert and slotted cover.

G. When specified: 5/8" deep recess in counter top full-length of pan-opening or as shown, with equal-length removable ¾" thick Read Products "PolyLite" cutting board sections, 42" long maximum. Recess and board: spaced 2" from front edge of pan opening and extended to leading edge of counter top.

2.12 SINKS

A. 14-gauge stainless steel; all interior corners (horizontal/vertical) coved on ¾" radius. 1½" wide double-walled partitions with flat tops between compartments.

B. Continuous exterior panels of multiple-compartment sinks: 14-gauge stainless steel filler panel welded, ground and polished between compartments.

C. Sinks (with overflow): score and slope sink bottom ½" to die-stamped opening fitted with Fisher 22306 twist waste valve 3 1/2" x 2" with overflow and tailpiece. 14-gauge stainless steel bracket: welded to sink bottom for drain stem with 1½" handle clearance.

D. Where sinks are installed in fixture with Closed Base Body, provide a Fisher 22306 twist waste valve 3 1/2" x 2" with overflow and tailpiece. (Sinks with dimension larger than 20" x 20" in Closed Base Body will not have overflow fitting.) 14-gauge stainless steel bracket: welded to sink bottom with T & S Model No. BL-4740-1 guide bushing. Install on shortened drain stem, one T & S Model No. BL-4710-1 remote control stem assembly only (length as required) with Model No. 113-L universal joint and white blank button. Set drain control handle in Cambro Model PSB-6 bowl with bottom omitted (dress raw edge) to permit passage of drain handle. Secure bowl in utility compartment door or body panel with clear silicone.

E. When single-hole deck-mounted faucets are specified, install overflow fitting in sidewall of sink compartment and provide ell-fitting in connecting tubing.

F. Flush Covers when specified: 1/2" thick Read Products, Inc. "Richlite" cutting board, size as indicated. Support clips: ¼" stainless steel rod 2" long, formed at 45º with two ¾" leg ends (¼" long threaded ends). Insert rod-clips through tight-clearance holes in sink, seal watertight and secure with stainless steel acorn-nuts or tack-weld at exterior of sink wall. Set support clips ½" below top. Provide 14-gauge stainless steel channel or angle support frame to store covers when not in use. Cover holder: adjacent to sink compartment, below counter top or under drawer assembly.

2.13 TRAYSLIDES (UNLESS OTHERWISE SPECIFIED)

A. Trayslides: 12" wide, solid 16-gauge stainless steel turned up 2" at rear behind counter top turndown; turned down 4" at front and free ends, unless otherwise indicated.

B. Three ¼" high die-formed inverted "vee" ridges at 4" o.c., 2" from leading edge, terminating 2" from ends of trayslide with tapered ridge-ends.

C. Ridges formed on radius: equal-length segments with 2" separation between chords.

D. Secure trayslides to counter-top/body frame, same as "Counter Tops." Enclose exposed underside of trayslide with 18-gauge stainless steel.

E. When indicated, project trayslides 2" beyond serving counter top and return the full-width of serving counter at free ends.

F. All trayslides to be provided and mounted per ADA requirements.

2.14 DISHTABLES

A. Soiled/clean dishtable: 14-gauge stainless steel; free edges coved up 3" with 1½" diameter rolled rim and bullnosed corners.

B. Edge of dishtables next to high fixtures or walls: coved up 10" and sloped back 1½" on 45º angle; 2½" slope where piping occurs. Turn down 1" at rear of splash and secure to wall with 4" long 14-gauge stainless steel "Z" clips anchored to wall, @ 36" o.c.

C. Exposed rear splash: 16-gauge stainless steel finish panel from top of splash to bottom edge of rolled rim with welded vertical joint at end. Secure panel with concealed attachment and install bracing 24" o.c.

D. Cove all interior corners (horizontal/vertical) on ¾" radius and slope tables 1/8" per foot to sinks, scuppers or warewash machines, maintaining level crown/splash.

E. Brace dishtables with 1" x 4" 12-gauge stainless steel channels down centerline of top and between each pair of legs, with closed ends. Bracing: secured to underside of dishtable with ¼" studs welded 6" o.c. maximum, with chrome-plated washer, lock washer and cap nut. Studs: such length that the cap nuts can be made up tight, bringing the dishtable down on the channel-members, eliminating all vibration and "oil-canning."

F. Integrally welded stainless steel flange or inverted gusset where service utilities or support posts penetrate or abut tops; ground and polished to match top.

G. Hose Bibb: Chicago Model No. 305VBRCF; mounted on 12-gauge stainless steel flange or inverted gusset bracket with 3/8" stainless steel rod hose hanger.

H. Extend underbracing members to wall, turn down 6" and anchor to wall when specified to be mounted on leg/bracket assembly.

I. Paper-Drop Opening: 9" square with 4" integral chute having hemmed bottom edge. Slope dishtable top 1" toward opening, forming a 16" square tapered deposit point.

J. Accessible Tray-Drop Opening: 10" x 18" with integral 16-gauge stainless steel seamless chute sloped on 45º angle toward center of mobile soak sink position.

2.15 DISH / TRAY DEPOSIT ASSEMBLY

A. 14-gauge stainless steel deposit shelf, size as indicated. Extend shelf through opening, flush with public side of partition, height as required by local code authorities. Turn shelf down 1" at front with ¾" return at bottom (either scribed into partition or forming reveal). Shelf: 1" square turndown at rear long side, integral with conveyor slider pan, tray-accumulator or dishtable. Extend rear/end splash to align with head of deposit station opening. Modify rolled rim at the operator's side of the tray drop window to have a 3" rolled rim.

B. 18-gauge stainless steel window frame with perimeter flange channel-formed 1" x ¾" at both sides of wall. Weld all corners of frame and install with concealed attachment. Align/abut one jamb of frame with end splash of conveyor slider pan or dishtable whenever adjacent.

2.16 UTENSIL - WASH COUNTERS

A. 14-gauge stainless steel; all free edges coved up 3" with 1½" diameter rolled rim and bullnosed corners.

B. Edges of utensil-wash counters next to high fixtures or walls: coved up 10" and sloped back 1½" on 45º angle; 2½" slope where piping occurs. Turn down 1" at rear of splash and secure back splash to wall with 4" long 14-gauge stainless steel "Z" clip anchored to wall @ 36" o.c. Vacuum breaker pockets: 4" long square turnback sections, aligned with slope breakline.

C. Exposed Rear Splash: 16-gauge stainless steel finished panel from top of splash to bottom edge of rolled rim with welded vertical joint at end of splash and ½" turnback at bottom of panel. Secure panel with concealed attachment and install bracing 24" o.c.

D. Cove all interior corners (horizontal/vertical) on ¾" radius and slope tables 1/8" per foot, maintaining level crown.

E. Brace utensil-wash counters with 1" x 4" 12-gauge stainless steel channels down centerline of top and between each pair of legs, with closed ends. Bracing: secured to underside of dishtable with ¼" studs welded 6" o.c. maximum, with chrome-plated washer, lock washer and cap nut. Studs: such length that the cap nuts can be made up tight, bringing the dishtable down on the channel-members, eliminating all vibration and "oil-canning."

F. Integrally welded stainless-steel flange or inverted gusset where service utilities or support posts penetrate or abut tops: ground and polished to match top.

G. Extend underbracing members to wall, turn down 6" and anchor to wall when specified to be mounted on a leg/bracket assembly.

H. Hose Bibb: Chicago Model No. 305VBRCF; mounted on 12-gauge stainless steel flange or inverted gusset bracket with 3/8" stainless steel rod hose-hanger.

2.17 DOORS

A. 18-gauge x 1" stainless steel double pan-formed welded construction, insulated with 1" thick polyurethane boards. Seal perimeter joint of pans. Offset lower horizontal framing member of Closed Base Body to align flush access door with bottom of Body.

B. Channel-formed full-length horizontal recessed pull: ¾" turndown at front and ends with ½" tight hem. Front edge of pull: flush with face of door. Recess behind pull: sloped up on 60o angle and terminated 1" below bottom edge of pull.

C. Door Hardware:

1. Two Component Hardware Model No. M75-1002 stainless steel hinges (notch door/jamb at hinge location).
2. Component Hardware Model No. 35-2000 concealed Magnetic Catch.
3. Component Hardware Model No. D30-4780 lock in upper free corner of door.

D. Louvered opening: cutout opening size as indicated, turn in 1" and weld. All corners: ground and polished.

1. 1. Full-height 18-gauge stainless steel louver with 1" vanes at 45º, ½" spacing. Perimeter channel-formed frame: 1½" x 1".
2. 45º x 1" x ½" x opening width plus ½" 18-gauge stainless steel louver.
3. 2. Tack weld tab of louver flange to back panel of door.

E. Drain handle opening: 6" diameter hole through double pan to accommodate Cambro Model No. PSB-6 Bowl.

1. Secure bowl to door panel with clear silicone.
2. Omit bottom of bowl. Dress raw edges of opening for passage of drain handle.
3. Exposed insulation at penetration of door pan: painted black.

F. Sliding Doors: fabricate same as Paragraph "A."

1. Aluminum Sliding Door Track: Component Hardware Model No. B57-0000 Series, length as required. Secure to angle frame at top of underside.
2. Front/rear door sheaves: stainless steel ¾" side mounted door hangers; two (2) required per door.
3. Recessed Vertical Pull at Upper Corner of Door: Component Hardware Model No. P63-1012.
4. By-Passing Door Guides secured to bottom shelf: Component Hardware Model No. B62-1093.
5. Door Stop at bottom edge of door: Component Hardware Model No. B60-1086.

G. Offset lower horizontal framing member of Closed Base Body/utility compressor compartment to align door flush with bottom of Body.

2.18 CLOSED BASE BODIES

A. Frame: rigid-welded 1½" x 1½" x 1/8" galvanized steel angle forming a continuous structure around the top and bottom perimeters of the fixture, a post at each corner, studs spaced 48" o.c. maximum. Top of frame is cross-braced with 1½" angles, 2'-0" o.c. maximum.

B. 18-gauge stainless steel panels and trim with concealed attachment. All seams: welded, ground and polished.

C. Exposed Vertical Corners: rounded on ¾" radius. Closed Base Bodies adjacent to walls or fixtures: square corners.

D. Vertical and horizontal channel members at shelf interior or drawer enclosures, such as corners and center mullions: closed and sealed

E. Closed Base Bodies set on finished masonry platforms: closed and caulked at underside of equipment overhang and bolted to platform. Body overhang of platform: 1" at free ends 2" at front and exposed rear sides.

F. Closed Base Bodies not set on platform: Component Hardware Model No. A54-2-6, 6" legs spaced 5'-0" o.c. maximum.

2.19 COMPRESSOR COMPARTMENTS

A. Same material as Closed Base Bodies with back and end partitions; omit bottoms only.

B. 10-gauge steel slide out support: channel frame on full extension slides with 125 lb. minimum capacity secured to fixture frame with anti-vibration mountings for maximum sound deadening. Closed Base Body on solid platform: front-to-back slide out support channels set 4" above bottom for air circulation.

C. Access Door: 18-gauge stainless steel double-pan type with channel formed horizontal recessed pull full length of top (similar profile as Garcy Model No. R-1060) with closed ends. Channel-formed horizontal pull: ¾" turndown at front and face of door. Recess behind pull slopes up on 60o angle, terminating 1" below bottom edge of pull. Offset lower horizontal framing member of Closed Base Body to align flush access door with bottom of body. Door hardware: two Component Hardware Model No. M75-1002 stainless steel hinges (notch door/jamb at hinge locations) and Component Hardware Model No. 35-2000 concealed magnetic catch.

D. Access Doors Louver: full-height, with 1½" x 1" x 18-gauge stainless steel channel-formed frame with welded corners. 18-gauge stainless steel louver. Submit sample of design for approval.

2.20 UTILITY COMPARTMENTS

A. Closed Base Bodies or Pedestal Supports: fitted with utility compartments wherever piping or wiring is required in/on the fixture.

B. Same material as Closed Base Bodies with full-height back and end partitions. Omit bottoms except at hose-reel locations.

C. Access Doors: 18-gauge stainless steel double-pan type with channel formed horizontal recessed pull full-length of top (similar profile to Garcy Model No. R-1060) with closed ends. Channel-formed horizontal pull: ¾" turn down at front of door, recess behind pull slopes up on 60o angle, terminating 1" below bottom edge of pull. Offset the lower horizontal framing member of the Closed Base Fixture to permit flush alignment of door with face and bottom edge of body. Door hardware: two Component Hardware Model No. M75-1002 stainless steel hinges (notch door/jamb at hinge locations) and one Component Hardware Model No. 35-2000 concealed magnetic catch.

D. No shelves of Closed Base Fixtures are to be penetrated.

2.21 UTENSIL RACKS

A. Rack: ¼" x 2" 300 series stainless steel flat bar with No. 4 finish, fully welded and formed to match shape shown on drawings. Lowest band: 7-6 aff, unless otherwise indicated.

B. Ceiling Mount Supports: 1-5/8" diameter 16-gauge stainless steel tubing from band to 18" above ceiling. Anti-sway bracing above ceiling: 1½" unistrut members. Tubing penetrations at ceiling: Component Hardware Model No. A16-0206 stainless steel gussets.

C. Table Mount Supports: 1-5/8" diameter 16-gauge stainless steel tubing extended thru counter top. Secure to closed base framing or cross rail/undershelf on open base fixture. Tubing penetrations of counter tops: integrally welded stainless-steel inverted gusset.

D. Utensil Rack Hooks: Component Hardware Model No. J77-4401 stainless steel hooks spaced 8" o.c. maximum.

E. Electrical Receptacle: NEMA No. 5-20-R or as noted. Mount in fully welded 3½" x 5½" x 3" 14-gauge stainless steel enclosure with ½" radius corners. Stainless steel cover plate to fit specified receptacle. Pre-wire thru tubular support for final connection above ceiling by Division 26.

2.22 CASHIER / SERVING COUNTERS

A. Exterior Body Panels when specified: ¾" thick marine grade hardwood plywood with plastic laminate or solid polymer in Architect's selection of color/pattern at all exposed surfaces; backing sheet where concealed.

B. Position, size and finish horizontal or vertical reveal as directed by Architect.

C. Secure panels to counter body framing in concealed manner. Install removable panels with "Z" clips overlapping body framing members.

D. Hinged doors in exterior body panel(s): Grass Model No. 1200VZ or 1200VZ8 self-closing hinges. Three (3) required per door; Grass Model No. G/HRZ base plate at each hinge; Ives Model No. TM820 concealed push latch at each door. Confirm Model No. and provide samples with submittal.

E. Cashier counter to have 16-gauge s/s intermediate shelf, turned down 1 1/2" with tight hem at front. Cove up 2" at rear and sides. Brace undershelf with 1" x 4" 14-gauge stainless steel channel at longitudinal centerline. Provide outlet for power/data within body located above intermediate shelf. Provide cash drawer inserts per district standards.

2.23 OPEN BASE STRUCTURES

A. 1-5/8" o.d. x 16-gauge seamless stainless-steel tubing legs beveled at bottom. 1¼" o.d. crossrails fully-welded (360o smooth and polished) to legs at 10" aff, o.c.

B. Top of Leg: inserted in Component Hardware Model No. A20-0206 gusset fully welded to table frame or sink bottom.

C. Bullet Foot: Component Hardware Model No. A10-0851.

D. Freestanding fixtures requiring utility connections: Component Hardware Model No. A10-0854 flanged feet at the fixture corners, anchored to floor with non-corrosive bolts.

E. Table Bases: maximum leg spacing of 6'-0" o.c.; dishtable and utensil wash counter bases at 5'-0" o.c.

F. Open Base equipment specified to be supported by brackets at the rear side only (not completely cantilevered): tubular legs at front side only with Component Hardware Model No. A10-0854 flanged feet anchored to floor with non-corrosive bolts. Front-to-back crossrail: fitted into Component Hardware Model No. A20-0406 circular gusset secured to wall with non-corrosive bolts.

2.24 UNDERSHELVES

A. Open Base Structures: 16-gauge stainless steel turned down 1½" with tight hem at bottom. Notch all corners to fit tubular legs and weld from underside to completely fill gap; grind and polish. Cove up 2" at rear or ends adjacent to wall, columns, refrigerators, etc. The turn up at freestanding fixtures is to be hemmed tight to bottom of turndown. Brace undershelf with 1" x 4" 14-gauge stainless steel channel at longitudinal centerline and at each intermediate pair of legs.

B. Open Base Structure specified to be supported by brackets at rear side only (not completely cantilevered): 16-gauge stainless steel turned down 1 ½" at free sides with tight hem at bottom edge. Notch all corners to fit tubular legs as required and weld from underside to completely fill gap; grind and polish. Cove up 2" at rear ends, as indicated. Fill gap at front to back rail, grind and polish. Brace undershelf with 1" x 4" x 1" 14-gauge stainless steel channel at longitudinal centerline between front to back rails.

C. Closed Base Fixtures: 16-gauge stainless steel turned down 1½" at front. Front edge of bottom shelf: turned back and sealed to finished masonry platform or boxed for leg application. Center shelf has ¾" tight hem.

1. Shelves: turn up square at ends (coved up at rear only) to the shelf above or counter top flanged out for attachment with no open spaces at interior.
2. All shelf partitions at exposed ends of cabinet bodies or interiors: free of exposed framing members.
3. Reinforce shelves with full-length 1" x 4" x 14-gauge stainless steel closed hat channel.
4. Unless otherwise noted, all closed base undershelves are to be 22" deep, clear.
5. Fully weld smooth and polish, the vertical seam of shelf turndown/turn up with face of body partition.
6. Seal the vertical seam of square turn-in at exposed interior of open shelf sections.

2.25 ANCHOR PLATES / WOOD GROUNDS

A. Behind finish surface wherever building wall, partitions or ceiling construction will not accommodate direct attachment of equipment such as overshelves, wall cabinets, hose reels, utensil racks, exhaust hoods, display cases, etc. Material and installation by General Contractor. Location and coordination with trades by Section 11 4000.

B. Anchor Plates: not less than 12" x 12" x ¼" thick steel, secured to the structure above or behind the finished surface, positioned at attachment points.

C. Wood Grounds: length required by fixture, component or device, 24" wide x ¾" thick plywood secured to partition system prior to gypsum board installation.

D. Above ceiling supports: structural shapes (4" x 8.0 lb. channel) suspended from structure. Maximum height 15'-0" aff. size: width of equipment x length of equipment plus 6'-0". Cross bracing at 6'-0" on center maximum.

2.26 OVERSHELVES

A. 16-gauge stainless steel with free edges turned down 1" with ½" tight hem at bottom. ¾" radius at free corners.

B. Turn up 2" raw at walls and sides with horizontal coved corner at rear. Round front corners of turn up on ¾" radius.

C. Where shelf width exceeds 12" width, reinforce with ½" x 4" x 14-gauge stainless steel closed hat channel full-length of shelf.

D. Wall-Mounted Shelves: 16-gauge stainless steel brackets 48" o.c. maximum, set in 6" from ends.

E. Freestanding Shelves: where splash is required at free overshelves, turn up square 2" at ends, cove up at rear and hem tight to lower edge of front turndown. Weld exposed corners.

1. Freestanding overshelves: 16-gauge stainless steel cantilevered brackets at rear of table; double-cantilevered brackets at center of table. Posts for cantilevered overshelves are 1-5/8" o.d. x 16-gauge stainless steel secured to underframe, 4'-0" o.c. Ends of shelves: secured to adjacent wall/fixture or mounted on 1¼" diameter stainless steel posts.
2. Freestanding overshelves not on cantilevered brackets: 1¼" o.d. x 16-gauge stainless steel posts, each pair at 4'-0" o.c., maximum.

F. Baker Table Overshelves: supported at 18" above top with 1¼" o.d. stainless steel tubular supports with channel shoe secured to risers.

G. Glass/Cup Rack Overshelf at Dishtables: 14-gauge stainless steel with 1½" deep "vee" trough at free long sides with 1" tight hem at inside of trough. Provide a ½" marine edge at free ends; 4" splash at wall. Suspend shelf at 18" above dishtable surface on posts/brackets anchored to dishtable frame/wall at rear; 1" o.d. stainless steel tubing supports from structure above ceiling at front edge, 60" o.c./each end.

1. Install at both ends, ½" stainless steel drain-tube (connecting both vee-troughs) extended to dishtable surface through splash turnback.
2. Rack-rest: horizontal full-length 1-5/8" o.d. stainless steel tubing supported at 10" o.c. above shelf (8" o.c. for double service shelf) by 1¼" o.d. stainless steel tubing with closed ends. Support tubing: welded, ground and polished, spaced 60" o.c.
3. Rack-rest supports to wall: 4" x 4" x 10-gauge stainless steel flange plates welded to support tubing. Anchor flanged plates to blocking ground with non-corrosive bolts.

2.27 DRAIN TRENCH LINER / GRATING

A. Liners: 14-gauge stainless steel in sizes as indicated.

B. Interior of liners: 6" deep with all interior corners (horizontal/vertical) coved on ¾" radius; sloped and scored 1" to integrally welded Component Hardware Model No. D34-Y011 basket drain assemblies @ 48" o.c., fitted with 6" long welded tailpiece. Stainless steel safety chain: connected to basket strainer assembly and top of liner wall.

C. Liners: 1" wide perimeter shoulder at the top, turned up flush with finished floor, tight-hemmed back down to the shoulder level and flanged out 2" for attachment to the slab.

D. Underside of sloping portion of liner: 2" long "Z" clips.

E. Grating: IMC-TEDDY PFD-ADA removable fiberglass grating.

1. 1" deep "I" bearing bars with 0.6" wide top flange.
2. Full perimeter frame, section quantities and sizes indicated.
3. Maximum of 2'-0" sections.
4. Grating bars to be spaced 0.4" apart per ADA requirements.
5. Grating to be two (2) equal sizes.

2.28 WALL PANELS

A. Wall Panels: 18-gauge stainless steel, double pan-formed ½" thick with internal stiffener members. Fill with USDA approved thermal insulation, full height and width of panels, attach to interior with mastic. Maximum allowable temperature at rear side of panel: 120oF.

1. Height of panels as required: top of tile base to underside of hood, top of tile base to top cap of stub wall or top of splash to underside of hood.
2. Level and square lower edge and sides.
3. Butt joint all panels.

2.29 EXHAUST HOOD (Surface - Mounted Condensate)

A. Hoods: size/shape as indicated: 18" high at interior.

B. Body: 16-gauge stainless steel, with all seams welded, ground and polished.

C. Continuous condensate trough at perimeter: 3" x 1".

D. Frame top of hood with 1½" angle iron assembly and suspend from structure above ceiling by ½" diameter steel rods, drawn tight against finished ceiling surface.

E. Duct opening/collar as specified with stainless steel louvered grille over opening.

F. Div. 22 to extend drain line to floor sink. Drain line to be silver painted.

G. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.

2.30 EXHAUST HOOD (UNLESS SPECIFIED OTHERWISE)

A. Exhaust to be provided to meet local jurisdiction code requirements. Kitchen Equipment Contractor to verify code requirements and coordinate with Division 23 and 26. Hoods over production equipment to be Type 1 with continuous capture. All Type 1 hoods to be 6' deep to ensure smoke/steam capture unless notated otherwise.

B. Install fire suppression system(s) in all ventilators, specified in this section. Install in accordance with manufacturer's recommendations and applicable codes or standards. Submit installation certification form to Architect.

C. Locate chemical cylinders as indicated on drawings and install piping to exhaust hood(s) in totally concealed manner. Set cylinders and cabinets at 7"-0" clear AFF unless noted

otherwise. Provide polished chrome plated tubing piping/fittings, where exposed at cylinder location and at interior of exhaust ventilator. Exposed pipe threads in/above food zone not allowed. Submit schematic diagram of installation and confirm critical distances from cylinders to nozzles.

D. Remote manual release located in path of egress from protected exhaust hood area. Kitchen Equipment Contractor to coordinate location with local Fire Marshal requirements prior to submittal review. All conduits to be recessed within wall, SURFACE MOUNTING WILL NOT BE ACCEPTED.

E. Provide one (1) handheld Type 'K' 6-liter fire extinguisher per Ansul system, surface wall mounted.

F. Required quantity and sizes of mechanically operated gas valves.

G. Confirm interconnection of all equipment as required to ensure exhaust hood and fire suppression systems are completely operational and meet local jurisdiction code requirements.

H. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.

I. Provide appropriate quantity of fire suppression systems as required by local jurisdiction code requirements.

2.31 HIGHLIGHTING

A. Polish the following vertical surfaces to a No. 8 finish:

1. Serving and display shelf turndowns.
2. Conveyor and dish/tray deposit station turndowns/frame.
3. Trayslide turndowns.

2.32 SHOP / FIELD JOINTS

A. Field joints: least possible number, used only when equipment size must be limited for access into building or interior space.

B. Stainless steel tops (including edges and splashes): fully welded, ground and polished to match adjacent surface.

C. Vertical field joints of fixture backsplashes that are inaccessible from the back: terminate 1” above the horizontal coved corner. The remaining height of field joint: hairline butt joint with offset draw-angle behind. All horizontal/vertical draw-joints: located and noted on shop drawings.

D. Hairline butt joint: 1½” x 1½” x 1/8” steel angles welded to back/underside of counter top/shelf. Offset angle beyond joining metal edge ½” (min.) to provide flat backing surface for joint with angle of other joining metal edge, set for ½” space between vertical legs of angles. Bolt sections together with 5/16” machine bolts, lock washers, acorn head cap nuts, set 3” o.c.

E. Closed Base Bodies: draw-type with hairline seam fully field-welded.

F. Millwork: plastic laminated material joints shall be doweled, glued and draw-bolted with fasteners.

G. Solid Polymer: surfaces drawn tight, filled, sanded and finished to match adjacent surface.

2.33 PREFABRICATED COLD STORAGE ASSEMBLIES

A. Assembly to be installed by Factory Authorized Installers only.

B. KEC to provide a 1-year walk-in panel installation warranty. Panel installation warranty to cover labor and part replacement issues resulting from a failure to adequately complete the following during installation:
1. Walk-in panels to be installed in a square, plumb and level manner.
2. Ceiling panels to be installed flush and tight to wall panels with the gasket material undamaged and to create a proper seal. Any signs of condensation at joints or walk-in walls should be reported to FDP and addressed immediately. Caulk at panel seams will not be an acceptable solution.
3. All cam-locks should be engaged and button holes in place.
4. Any gaps under floor angle (due to shimming) must be sealed completely to the slab.
5. All penetrations in ceiling or wall panels should be insulated and sealed.
6. Proper installation of the door systems should allow for the door to self-close and seal around the perimeter of the door opening and at the floor threshold.
7. Final operation of the IC/IC+ control, door heaters and light switches should be confirmed upon completion of the electrical connections.
8. Service issues, resulting from faulty installation will be covered under the walk-in panel installation warranty.

C. KEC is responsible for overall install accuracy/quality and quality control of work performed regardless of installer or any field modifications due to building/construction conditions. KEC to provide Letter of Install Approval to FDP upon completed install verifying that all items above have been inspected by the KEC for completeness. This letter will be required as part of the completion of the contract.

D. Sectional Assemblies: size/shape indicated on drawings; 8’-6” aff unless otherwise specified. Door locations/size: exactly as shown.

E. Sandwich Panel Insulation: Class 1 Urethane with vapor barrier, 4” thickness with mature “U” factor of .030 or lower.

F. Wherever compartment dimension exceeds clear-span ability of ceiling panels, provide I-beam support on exterior of ceiling or spline-hangers. Install ½” diameter steel rods through beam/hangers and secure to structure above. Beams or posts within compartments are not acceptable.

G. Reinforce prefabricated wall panels to rigid support the door assemblies. All door jambs: furnished with replaceable full-perimeter thermostatically controlled heater cable. Install 2” x 4” 16-gauge stainless steel hat-channel full-width of jamb with 1/8” stainless steel removable flush sill, secured with stainless steel screws and sealed watertight to channel.

H. Provide aluminum cove base at interior and exterior of exposed panels for all floor assemblies.

I. 8-1/2” Recessed Factory Floor Assemblies:

1. Factory floor in slab recess with all joints lapped 6 inches and sealed to form a watertight seal.
2. Level and square prefabricated perimeter and partition wall panels, anchored to slab recess. Protect exposed surface of panels.
3. 4" manufacturer's floor.
4. 15# felt slip sheet over insulation with 6” lapped joints flashed up the height of finished floor base.
5. 1/2" sand leveling bed by G.C.
6. Concrete flooring and tile over insulation by Divisions 03/09.

J. 4” Recessed Exposed Factory Floor Assemblies:

1. 6 mil polyethylene sheets in slab recess with all joints lapped 6 inches and sealed to form a watertight seal.
2. Level and square prefabricated perimeter and partition wall panels, anchored to slab recess. Protect exposed surface of panels.
3. 4" commercial grade manufacturer's durafloor with diamond treadplate surface and marine grade plywood subfloor.
4. 15# felt slip sheet over insulation with 6” lapped joints flashed up the height of finished floor base.
5. 1/2" sand leveling bed by G.C.

K. Surface Mounted Factory Floor Assemblies:

1. 4" commercial grade manufacturer's durafloor with diamond treadplate surface and marine grade plywood subfloor.
2. 36" re-enforced diamond treadplate internal ramp.
3. 10-gauge stainless steel threshold to provide smooth transition to interior walk-in floor.

L. Modularm Model No. 75LC temperature monitor/alarm with sensor and probe-cord length required to extend from exterior front of assembly to a mounting position of the sensor within evaporator return air-stream. System to include built in panic alarm. System to be interconnected to building’s alarm system by Division 27.

M. Unless otherwise specified, provide Cooper Atkins Temp Track smart system. Confirm all component model numbers for complete installation and operation.

N. LED surface-mounted light fixture, in quantity/arrangement shown on drawings. Light fixtures to be perpendicular to coils. Light fixtures wired to interior and exterior temperature control panel. Light fixtures to be provided by Section 11 40 00 and installed by Division 26. Division 26 to seal both sides of conduit penetrations at light fixtures.

O. Penetrations of Panels: To be sealed by factory installer with Dow Corning 3-6548 silicone RTV foam, full depth of panel. Trim excess flush.

P. Install closure panels and/or trim strips to building walls and ceiling with concealed attachment. Closure material: same as wall panels unless noted otherwise.

Q. Compartment Entrance Doors: 36” x 78” nominal clearance unless otherwise noted.

1. Mount hinged doors on three Kason Model No. 1346; polished chrome plated nylon cam-lift hinges.
2. Swing doors as indicated on drawings.

3. Defrost heater: thermostatically controlled and replaceable at full perimeter of all doors, except when using clear Lexan doors (in addition to door jambs). Defrost heaters to be wired for continuous service.
4. 36" high x full-length diamond aluminum treadplate at front and rear of all hinged doors.
5. 12" x 2" engraved phenolic plastic compartment identification sign in Architect's color selection with 1" letters, mounted above door window.
6. 14" x 24" four-panel glass view window with heater and molded non-metallic inner and outer frame. Heater to be wired for continuous service.
7. Padlock/key provisions in door latch with interior safety release.
8. Provide one (1) heated pressure relief port for each cooler/freezer section with separate dedicated electrical circuits. Heated pressure relief ports in freezers to be wired for continuous service. Heated pressure relief port for freezer to be located on common wall of cooler/freezer assembly, unless specified otherwise.

R. Provide refrigeration calculations and refrigeration alarm to meet local jurisdiction code requirements.

S. If air screens are specified above doors, manufacturer is to provide adequate blocking in panels to support air screens and pre-wired electrical connections. Installer to coordinate location of door closure as to not interfere with air screens.

T. S/S trim above walk in to conceal manufacturers ceiling grid.

U. Field-check all horizontal/vertical measurements and conditions at the building prior to fabrication or delivery of equipment.

V. Installer to seal all holes in Cold Storage Assembly.

2.34 COLD STORAGE REFRIGERATION SYSTEMS

A. Unit Coolers: specified quantity and model, ceiling-hung by ½" o.d. nylon bolts with stainless steel washers and nuts. Insert hanger bolts through plastic sleeve and seal penetration airtight.

1. Unit cooler drain fittings: positioned as indicated on drawings. Installation of cast tee-fittings on drain pan outlet with union and cleanout plug and extension of 1" Type K copper drain line through wall panel to air-gap fitting or floor drain under this Section.
2. Slope drain line ½" per foot, trap at exterior of assembly and turn down into drain. Manifold drain lines of adjacent compartments wherever possible.
3. Install drain line plastic sleeve through compartment wall, seal around drain line and install stainless steel escutcheon with setscrews.
4. Electric drain line heater cable (self-regulating 7 watts): on all unit coolers operating below 36oF., installed from coil drain line fitting to wall penetration under this Section. Heater cables: minimum rating of 15 watts/lineal foot, 208 volts, single phase. Wrap drain line with maximum 2" loop spacing and interwire to unit cooler for continuous operation.
5. Mounted, pre-piped and pre-wired evaporator components:
   a. Sporlan thermostatic expansion valve with external equalizer.
   b. Shut-off valve at evaporator suction and liquid lines.
   c. Sporlan "Catch-All" refrigerant filter/dehydrator on liquid line.
   d. White Rogers 1609-101 adjustable thermostat with remote bulb positioned in return air-stream of evaporator.
   e. Electrical disconnect switch in NEMA 4 enclosure.

f. Condenser and Evaporators to be built with Electrofin coating to retard salt air deterioration. Coils to be coated with Technicoat 10-2 coating for protection against salt air environment.

B. Refrigerant System Installation.

1. Refrigerant Lines; Type "L" hard copper tubing. Fittings: wrought copper or brass designed for use with high temperature solder. Piping joints: made with silver solder (Sil-Fos). Piping: properly suspended from and anchored to the structure with adjustable hangers 6' o.c. maximum. Suction lines: sized to have maximum pressure drop of two pounds in medium temperature systems; one pound in low temperature system. Liquid lines: sized to give maximum pressure to prevent trapping of oil. Insulation on all suction lines: Armaflex insulation by Armstrong. ¾" thick at medium temp 1" thick at low-temp. Refrigerant lines in PVC or EMT conduit: sealed at both ends with Dow Corning 3-6548 silicone RTV foam. Exterior Refrigerant Lines to be wrapped by refrigeration system installer in self-fastening jacket of Type 3003-H14 aluminum alloy 0.016-inch thick. Provide aluminum strapping and seals for applying aluminum jacket and covers according to manufacturer's recommendations to provide completely weather-tight covering.

C. Evacuation and Charging.

1. After completion of the pressure test, the system shall be evacuated using an approved auxiliary vacuum pump. Connections for evacuation: in accordance with manufacturer's recommendations.
2. Charging subsequent to the initial charge, which is contained in the condensing unit (Type of Refrigerant to meet District Standards, Industry Standards and Codes.) - Non-CFC Ozone Depletion Refrigerant on low temp units) – (Refrigerant must meet local codes): given through the charging valve in the high side passing all of the liquid refrigerant through a charging dehydrator. All charging lines and gauges: purged of air prior to connection with system. Refrigerant: unused and shall be delivered in clean containers. After the system is fully charged: start and place in full operation.

2.35 PRE-APPROVED KITCHEN SUPPLIERS

A. Only the following named Subcontractors and those approved later, if any, are approved for inclusion in the Contractor's Bid.

B. Any supplier requesting for inclusion within this bid will be required to submit AIA form 305 minimum 14 days prior to bid date for review, or as required by Architect.

1. Ed Don & Company, 3501 Plano Parkway, The Colony, Texas 75056, Mr. Scott Jost, Phone: (972) 624-7460, Fax: (972) 624-7762, E-mail: scottjost@don.com
2. Custom Kitchen Equipment Company, 2601 Wilson Road, Humble, Texas 77396, 281-446-8187, Fax: 281-446-8180.
3. Texas Metal Equipment Company, Mr. Andrew Harman, 6707 Mayard, Houston, Texas 77041, 713-466-8722, Fax: 713-466-0166.
4. Pasco Brokerage, Ms. Kasey Hollon, 6465 Chase Oaks Blvd., Plano, Texas 75023, 972-596-3350.
5. Bargreen Ellingson, 2450 Handley Ederville Rd., Fort Worth, Texas 76118, Brian Mosher Phone: (817)732-6200.
6. Supreme Fixture Company Inc., 2000 N. Central Expressway, Suite 218 Plano, Texas 75074, Kevin Couch, Phone: 214-343-0700.

PART 3 - EXECUTION

3.1 DELIVERY AND INSTALLATION

A. Supervision: provide a competent foreman or supervisor who shall remain on the job during the entire installation.

B. Delivery: coordinate with progress of construction and Owner's operation schedules. Unless otherwise instructed and documented by Owner or General Contractor, the following procedures apply:

1. Field-Assembled Fixed Equipment integrated into the structure (e.g., cold storage assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, ceiling-mounted utensil racks, etc.) are to be sent to the job-site when directed by the General Contractor and installed/protected accordingly.
2. All other Fixed Equipment: delivered after completion of work on adjacent finished ceilings, lighting, finished floor and wall systems, including painting.
3. Major Movable Equipment: delivered when possible to inventory in secured area for interim job-site storage or, if secured area is not available, when fixed equipment installation/clean-up has been completed.
4. Minor appliances and loose items (e.g., pans, covers, flatware containers, etc.) delivered only when Owner is prepared to receive and inventory such items.

C. Installation: performed by manufacturer of custom fabricated fixtures.

1. Assemble, square, level and make ready all items for the final utility's connections.
2. Cut neatly around obstructions to provide sanitary conditions.
3. Where gaps of ¼" or less occur adjacent to or between equipment, insert rope backing and smoothly-applied General Electric construction sealant Series SE-1200 silicone mastic (white color). Mask both sides of gap for neat application of sealant and remove excess. If space exceeds ¼", neatly install 18-gauge stainless steel trim molding of proper shape with concealed attachment. Use epoxy cement or "Z" clips wherever possible to secure stainless steel trim. Exposed edges or corners of trim: eased and smooth.
4. Refrigeration coil drain line runs to indirect drain connection greater than 2" from face of wall or panel: either of the following field procedures.
   a. Trench the floor and provide 6" wide x 2" deep 16-gauge stainless steel sloping (-1" to -2") trough from face of cooler/freezer wall to body of floor sink/floor drain. Trough: turned up 4" at wall; ¾" flange with ½" turndown at both long sides. Set trough in waterproof mastic and seal 1" o.d. drain tube penetration into floor sink/floor drain at -2½" bff. Patch the floor to match adjacent material/surface.
   b. Provide 12" x 6" x 2" deep 16-gauge stainless steel condensate pan mounted to cooler/freezer wall at 6" aff clear. Trench the floor and install 1" o.d. drain line from bottom of pan to body of floor sink/drain. Slope drain line ¼" per foot and seal all connections watertight. Patch the floor to match adjacent material/surface.

D. Protection of Work:

1. Fabricated fixtures: fiberboard or plywood taped to tops and exposed body panels/components.
2. Manufactured Equipment: fiberboard or plywood taped as required by equipment shape and installation-access requirements.
3. Prohibited use of equipment: tool and materials storage, workbench, scaffold, stacking area, etc.

4. Damaged Equipment: immediately documented and submitted to Owner with Contractor's recommendation of action for repair or replacement and its impact on the Project Schedule and Contract Amount, if any.

3.2 CLEAN AND ADJUST

A. Clean up and remove from the job site, all debris resulting from this Work as the installation progresses.

B. Thoroughly clean and polish interior/exterior of all Foodservice Equipment, prior to demonstration and final observation, ready for Owner's use.

C. Lubricate and adjust drawer slides, hinges, casters.

D. Adjust pressure regulating valves, timed-delay relays, thermostatic controls, temperature sensors, exhaust hood grilles, etc.

E. Clean or replace faucet aerators, line strainers.

F. Touch-up damage to painted finishes.

G. Start up and check operation of all refrigeration systems for at least 72 hours prior to acceptance.

3.3 EQUIPMENT START-UP/DEMONSTRATION

A. Carefully test, adjust and regulate all equipment in accordance with the manufacturer's instructions and certify in writing to the Owner that the installation, adjustments and performance are in full compliance.

B. Provide the Owner or Foodservice Operators with a thorough operational demonstration of all equipment and furnish instructions for general and specific care and maintenance. Coordinate and schedule selected items of equipment and attendees with Owner at least two weeks in advance of demonstration periods.

3.4 FINAL OBSERVATION

A. Final observation will be made when the Contractor will certify that he has completed his work, made a thorough review of the installation/operation of each item in the contract and found it to be in compliance with the Construction Documents.

B. Repetitive final observations (more than two) and all costs associated thereto which may be incurred due to the Contractor's failure to comply with the requirements of this Article will be invoiced to this Contractor on a $70.00/hr. and expense basis.

PART 4 - EQUIPMENT SCHEDULE

4.1 REGULARLY-MANUFACTURED EQUIPMENT/COMPONENTS: Standard finishes and accessories unless specifically deleted or superseded by the Contract Documents.

4.2 FABRICATED AND FIELD-ASSEMBLED EQUIPMENT: Arrangement and configuration as shown on Plans, Elevations, Detail Drawings and outlined in Specifications.

4.3 REFER TO DRAWINGS: For unit quantities and electrical or mechanical provisions required, including manufacturer's optional voltages, wattages, burner capacities, etc.

4.4 REFER TO PART 2 – PRODUCTS: For accessories, fittings, requirements and procedures related to the listed buy-out and fabricated equipment.

4.5 ALTERNATE MANUFACTURER REQUIREMENTS: A specific product manufactured by the listed pre-approved equals shown under Section 4.7 Foodservice Equipment are acceptable only if the specific product can evidence compliance with the specified line items and the contract documents.

4.6 RE-USED EXISTING EQUIPMENT IF SHOWN

A. Existing equipment scheduled for re-use is to be inventoried and documented that equipment is in operating condition once Kitchen Contractor has taken ownership.

B. Provide pictures of all equipment once inventoried and issue to the architect to ensure that equipment has not been damaged.

C. Verify locations of all equipment with owner.

D. Existing equipment that is to be reused may be missing parts or accessories for proper and complete operation. Submit report listing all items with pricing for approval to allow complete installation.

E. Utility disconnection and re-connection: under Divisions 22 and 26. Kitchen Contractor to verify utility requirements of existing equipment and coordinate with Kitchen Consultant as required. All utilities not scheduled for re-use to be capped and covered by required disciplines.

F. Disassembly, removal, transportation and relocation: under this Section and scheduled with General Contractor. Owner’s representative must be present, coordinate date / time with owner.

G. Thoroughly clean inside and out prior to relocation.

H. Review functional parts (e.g., doors, controls, heating elements, compressors, etc.) and submit report of required repairs and estimate of cost. Any finishes or equipment damaged due to construction to be repaired as required.

I. Existing equipment not scheduled for reuse is to be carefully removed/relocated by the Kitchen Contractor per the Owner's direction. Kitchen Contractor to coordinate date / time with General Contractor and Owner.

J. Removal or replacement of existing equipment is to be scheduled for times of least interruption and inconvenience to the foodservice operation. Submit proposed schedule of time frame, task sequence and operation for approval prior to starting work.

K. Kitchen Contractor to verify size and shape for all existing equipment being re-used and coordinate with Foodservice Consultant as required.

L. Any modification(s) required/desired for re-used existing equipment to be verified by the Kitchen Contractor. All modifications must be approved by the Owner and Foodservice Consultant prior to the modifications being made.

M. The KEC is to verify and coordinate all of the utility requirements with the construction documents as required. Refer to the general specifications re: conflicts.

4.7 FOODSERVICE EQUIPMENT

A. All equipment to have a performance check from factory authorized personnel. Warranties will begin on the day of performance check.

B. All equipment and internal components should be of domestic origin where possible.

EQUIPMENT LIST

ITEM NO. 101 AIR SCREEN

QUANTITY 1

Manufacturer: Mars
Model: STD248-1UA-OB standard ext.
Size and Shape: Refer to drawings
Alternate: Berner

1. Air curtain, STD2 series model, unheated, obsidian black exterior. Size unit to fit door.
2. Air Curtain to include Model #J0023 Controller Kit. Controller kit to come complete with plastic magnetic reed switch, surface mounted, .50 HP max, 115v/1-ph limit switch. The magnet to be mounted on the surface of the door jamb and the door.
3. Confirm clearance above door prior to installation. Air Curtain to accommodate door width and height.
4. 114000 to provide magnetic reed switch kit loose to General Contractor for installation by Division 26. Division 26 to route flexible conduit to j-box on cabinet. Routing to be clean and secured to building.
5. Provide Harsh Weather Cover if no awning or recessed door is provided.

ITEM NO. 103 REFRIGERATION SYSTEM-STANDARD

QUANTITY 1

Manufacturer: RDT
Model: ZS1-2 EcoSmart
Size and Shape: Refer to drawings
Alternate:

1. Air cooled system.
2. Scroll Compressors.
3. Cooler temperature to be +35 degrees.
4. Freezer temperature to be -10 degrees.
5. EcoSmart system on demand defrost.
6. KE2 Evap Controllers located per Owner requirements.
7. S/S covered housing.
8. A dedicated electrical connection to be provided for heated condensate drain line. Refer to electrical plan for location.
9. All exterior piping to be aluminum wrapped.
10. System to accommodate Item No. 102 Cold Storage Assembly.
11. System to be located on roof. Coordinate location with architectural plans. Coordinate roof mounting requirements with appropriate trades.

12. Secure to roof if roof mounted.
13. Mount condensing unit on common exterior rack. Refer to Architectural and Engineering drawings for exact location of remote unit. Coordinate routing of refrigeration lines and conduit with appropriate trades. Heat tape and insulate all drain lines. General Contractor to seal all building penetrations at refrigeration lines.
14. Provide two (2) year parts and labor warranty for all parts and components (including third-party components that may be utilized).

ITEM NO. 104 COLD STORAGE SHELVING

QUANTITY 2

Manufacturer: Metro
Model: Metro Max Q
Size and Shape: Refer to drawings
Alternate:

1. Each unit to be four (4) tiers high with open grid mats.
2. Four (4) 74" post per unit. Provide foot plates at all posts when assembly is supplied with walk-in floor.
3. Refer to drawings for size, width and lengths.
4. Quantity Two (2) to equal One (1) lot: all shelving shown within cold storage assembly.
5. Verify shelving requirements with approved submittal prior to ordering.

ITEM NO. 105 DUNNAGE RACK

QUANTITY 5

Manufacturer: Metro
Model: Bow Tie Series
Size and Shape: Refer to drawings
Alternate:

1. Size as shown.

ITEM NO. 107 DRY STORAGE SHELVING

QUANTITY 1

Manufacturer: Metro
Model: MetroMax Q
Size and Shape: Refer to drawings
Alternate:

1. Each unit to be five (5) tiers high with open grid shelving.
2. Four (4) 86" posts per unit.
3. Quantity One (1) to equal One (1) Lot: all shelving shown within the dry storage room.
4. Refer to drawings for size, width and lengths.
5. Verify shelving requirements with approved submittal prior to ordering.

ITEM NO. 108 CAN RACK

QUANTITY 1

Manufacturer: New Age
Model: 1250CK

Size and Shape: Refer to drawings
Alternate:

1. Three (3) sets 1255, of shelf inserts to accommodate #5 and #10 cans.
2. Four (4) 6" plate casters, (2) swivel with brakes, (2) rigid.

ITEM NO. 110B STACKED WASHER & DRYER

QUANTITY 1

Manufacturer: Whirlpool
Model: Residential
Size and Shape: Refer to drawings
Alternate: GE

1. Washer:
2. 3.5 cubic ft. capacity.
3. Straight vane agitator.
4. 9 wash cycles
5. 4 water temperatures.
6. "Quick pak" sound insulation.
7. Color to be white.
8. Water and drain hoses.
9. Dryer:
10. 5.9 cubic ft. capacity.
11. 4 Drying cycles
12. Auto dry.
13. Color to be white.
14. To include dryer cord and vent kit.
15. Units to include model stationary assembly including: white stack stand, dryer wall mount kit,door latch kit.
16. Contractor to provide current model numbers at the time of delivery.

ITEM NO. 111 CHEMICAL SHELF

QUANTITY 1

Manufacturer: Metro
Model: MetroMax Q
Size and Shape: Refer to drawings
Alternate:

1. Each unit to be four (4) tiers high with open grid mats.
2. Four (4) 74" posts per unit.

ITEM NO. 112 WALK-IN FREEZER

QUANTITY 1

Manufacturer: American Panel
Model: ---
Size and Shape: Refer to drawings
Alternate: Thermo-Kool, Kolpak

1. Installation to be completed by Jack Horton or Factory Authorized Installer. **Installation to be completed by Factory Approved / Authorized installer. Refer to Section 2.34 Submittal drawings to include factory approval letter or certificate.**
2. Manufacturer to review final installation and provide a letter confirming installation meets manufacturer requirements.
3. Assembly to have 9'-6" interior clearance.
4. 304 #3 finish 20 gauge stainless steel finish where exposed, 26 gauge Acrylume where concealed.
5. 18 gauge stainless steel, type 304 (18-8), #3 finish trim where adjacent to walls and enclosure panels that extend to 2" above finished ceiling.
6. 3’-0” high diamond tread plate at exposed exterior surfaces. Fasten to wall with stainless steel fasteners. Coordinate hanging height with exterior cove base.
7. K.E.C. to provide aluminum cove base to interior and exterior of assembly. Provide sealant between floor and wall panels.
8. Interior walls to be .040” aluminum, white embossed texture on walls.
9. Ceiling to be embossed textured .040" aluminum baked white enamel.
10. Factory floor with smooth aluminum finish, recessed in slab 8 1/2". Secure floor to wall assembly with cam-lock assembly. KEC to ensure the floor assembly is level prior to the wearing bed installation. Kitchens finished floor to extend into walk-in.
11. Threshold to be smooth and level with finished floor. Critical: Floor threshold to be surfaced with Graphene Oxide Anti-Slip or similar surface to reduce freezing and prevent slip hazards.
12. One (1) 36" door. Door to be 18 gauge stainless steel, type 304 (18-8), #3 finish, with heated perimeter / door jambs / windows and threshold heaters. Each door to be equipped with 3'-0" high diamond tread kick plate on both sides of door. Mount hinged doors on two (2) Kason model no. 1346 (or equal); polished chrome plated nylon cam-lift hinges. Proper installation of the door system should allow for the door to self-close and seal around the perimeter of the door opening and at the floor threshold. All doors to be equipped with polished chrome Kason 1094 or equivalent door closer assembly. ***-CRITICAL- Door Heater to be wired and set for continuous service.***
13. Provide Kason model No. 1238 door handles with 1239 twist-off knob disassembly type inside release.
14. Provide door bumpers at doors.
15. Doors to be provided with CCI Industries, Inc., Clear-VU swinging door assemblies, Alternate: Kason
16. Reinforcement as required panel next to Freezer door (handle side - interior) for Push Button Panic Alarm and Release Knob.
17. The Freezer will have the KE2 Therm Combo Display model no. 21877 control panel with panic button tied into the Owner's network for notification. Control to be set for high/low limits. Route temperature sensor to be located to the side of evaporator coil. All interior controls to be located adjacent to each other with Panic Alarm to have dedicated Panic Button with Safety Yellow/Black Signage located at ADA level. ***Installer to maintain 18" clearance in front of controls for ease of access.*** -CRITICAL- Owner is to receive training on all controls and systems.
18. Provide Kason Interior Panic Alarm model no. 1967-A7 illuminated Push Button Panic Alarm with protective cover and Phenolic Label “PANIC” for entrapment within Cooler and Freezer (ADA mounting height). Panic Alarm Encasing is to be Safety Yellow/Black. Manufacturer to pre-run conduit within panel from Panic Alarm to junction at panel above Cooler and above Freezer door (or Cooler door if ‘inline’ assembly) for installation of Emergency Strobe/Horn. Division 114000

furnish loose two (2) external Emergency Strobe/Horn Beacons and Div. 26 is to interconnect the Push Button Panic Alarm to external Beacons (One in architectural ceiling above the Freezer door and One in the Cafetorium in location as directed by Architect). Division 27 will interconnect the Push Button Panic Alarm to the Building Automation System for Owner notification.

19. KEC to coordinate location of network switch with cold storage assembly as required.
20. Interwiring of temperature monitor panel to master building alarm system or to the Owner's network. Technology department to provide all interfacing of alarm system and with the building alarm system. Conduit from refrigeration system to monitor by Division 26. Temperature Monitor installation at 4'-0" above finished floor. All conduit to be located above walk-in cooler/freezer ceiling. Exposed electrical conduit is not acceptable. Manufacturer to provide one copy of electrical wiring diagram in advance of installation and one copy of electrical wiring diagram as-built on completion of installation.
21. Freezer: One (1) lot LED light fixtures to operate at -20º F. Lights to be installed perpendicular to coils.
22. Compartments to be have all electrical concealed within the walls or located above the ceiling.
23. Interior and exterior to be sealed with clear silicone. Stainless steel surfaces can be sealed factory approved waterproof and mildew resistant aluminum based metallic sealant.
24. All holes in assembly are to be sealed by assembly installer. Installer to confirm seal of all penetrations made by other trades and complete seal if necessary.
25. Freezer assembly to have Kason 1832 Large Spring Valve Heated Pressure Relief Port with wired indicator light. Locate at 12" below ceiling on cooler door panel and at 12" below ceiling on freezer door panel. All ports are to have separate dedicated electrical circuits. Pressure relief ports to be wired for continuous service. Relief port to be located, sized, and installed by Walk-in Manufacturer.
26. KEC to field verify all horizontal/vertical measurements and conditions at the building prior to fabrication or delivery of equipment.
27. KEC to provide 1 year walk-in panel installation warranty. KEC is responsible for overall install accuracy/quality and quality control of work performed regardless of installer or any field modifications due to building/construction conditions. KEC to provide Letter of Install Approval to FDP upon completed install.
28. Manufacturer to provide One Year Parts and Labor Warranty upon receipt of warranty letter.
29. ***-CRITICAL- Installer to verify continuous and proper operation of all door heaters and pressure relief ports.***
30. ***-CRITICAL- Required*: *Manufacturer Representative to provide training on controls and inside emergency release mechanisms.***
31. Provide safety/emergency placards at exterior and interior of cooler/freezer door assembly. Signage to be mounted on door at ADA level when a window is not present or below view window when window is included.

ITEM NO. 113 WALK-IN COOLER

QUANTITY 1

Manufacturer:	American Panel
Model:	---
Size and Shape:	Refer to drawings
Alternate:	Thermo-Kool, Kolpak

1. Installation to be completed by Jack Horton or Factory Authorized Installer. **Installation to be completed by Factory Approved / Authorized installer. Refer to Section 2.34 Submittal drawings to include factory approval letter or certificate.**
2. Manufacturer to review final installation and provide a letter confirming installation meets manufacturer requirements.
3. Assembly to have 9'-6" interior clearance.
4. 304 #3 finish 20 gauge stainless steel finish where exposed, 26 gauge Acrylume where concealed.
5. 18 gauge stainless steel, type 304 (18-8), #3 finish trim where adjacent to walls and enclosure panels that extend to 2" above finished ceiling.
6. 3’-0” high diamond tread plate at exposed exterior surfaces. Fasten to wall with stainless steel fasteners. Coordinate hanging height with exterior cove base.
7. K.E.C. to provide aluminum cove base to interior and exterior of assembly. Provide sealant between floor and wall panels.
8. Interior walls to be .040” aluminum, white embossed texture on walls.
9. Ceiling to be embossed textured .040” aluminum baked white enamel.
10. Factory floor with smooth aluminum finish, recessed in slab 8 1/2". Secure floor to wall assembly with cam-lock assembly. KEC to ensure the floor assembly is level prior to the wearing bed installation. Kitchens finished floor to extend into walk-in.
11. Threshold to be smooth and level with finished floor. Critical: Floor threshold to be surfaced with Graphene Oxide Anti-Slip or similar surface to reduce freezing and prevent slip hazards.
12. One (1) 36" door. Door to be 18 gauge stainless steel, type 304 (18-8), #3 finish, with heated perimeter / door jambs / windows and threshold heaters. Each door to be equipped with 3'-0" high diamond tread kick plate on both sides of door. Mount hinged doors on two (2) Kason model no. 1346 (or equal); polished chrome plated nylon cam-lift hinges. Proper installation of the door system should allow for the door to self-close and seal around the perimeter of the door opening and at the floor threshold. All doors to be equipped with polished chrome Kason 1094 or equivalent door closer assembly. ***-CRITICAL- Door Heater to be wired and set for continuous service.***
13. Provide Kason model No. 1238 door handles with 1239 twist-off knob disassembly type inside release.
14. Provide door bumpers at doors.
15. Doors to be provided with CCI Industries, Inc., Clear-VU swinging door assemblies, Alternate: Kason.
16. Reinforcement as required panel next to Cooler door (handle side - interior) for Push Button Panic Alarm and Release Knob.
17. The Cooler and Freezer will have the KE2 Therm Combo Display model no. 21877 control panel with panic button tied into the Owner's network for notification. Control to be set for high/low limits. Route temperature sensor to be located to the side of evaporator coil. All interior controls to be located adjacent to each other with Panic Alarm to have dedicated Panic Button with Safety Yellow/Black Signage located at ADA level. ***Installer to maintain 18" clearance in front of controls for ease of access.*** -CRITICAL- Owner is to receive training on all controls and systems.
18. Provide Kason Interior Panic Alarm model no. 1967-A7 illuminated Push Button Panic Alarm with protective cover and Phenolic Label “PANIC” for entrapment within Cooler and Freezer (ADA mounting height). Panic Alarm Encasing is to be Safety Yellow/Black. Manufacturer to pre-run conduit within panel from Panic Alarm to junction at panel above Cooler and above Freezer door

(or Cooler door if 'inline' assembly) for installation of Emergency Strobe/Horn. Division 114000 furnish loose three (3) external Emergency Strobe/Horn Beacons and Div. 26 is to interconnect the Push Button Panic Alarm to external Beacons (One in architectural ceiling above the Cooler door, One in architectural ceiling above the Freezer door, and One in the Cafetorium in location as directed by Architect). Division 27 will interconnect the Push Button Panic Alarm to the Building Automation System for Owner notification

19. KEC to coordinate location of network switch with cold storage assembly as required
20. Interwiring of temperature monitor panel to master building alarm system or to the Owner's network. Technology department to provide all interfacing of alarm system and with the building alarm system. Conduit from refrigeration system to monitor by Division 26. Temperature Monitor installation at 4'-0" above finished floor. All conduit to be located above walk-in cooler/freezer ceiling. Exposed electrical conduit is not acceptable.
21. Cooler: One (1) lot LED light fixtures. Lights to be installed perpendicular to coils.
22. Compartments to be have all electrical concealed within the walls or located above the ceiling.
23. Interior and exterior to be sealed with clear silicone. Stainless steel surfaces can be sealed factory approved waterproof and mildew resistant aluminum based metallic sealant.
24. All holes in assembly are to be sealed by assembly installer. Installer to confirm seal of all penetrations made by other trades and complete seal if necessary.
25. Kason 1832 Large Spring Valve Heated Pressure Relief Port with wired indicator light. Locate at 12" below ceiling on cooler door panel and at 12" below ceiling on freezer door panel. All ports are to have separate dedicated electrical circuits. Pressure relief ports to be wired for continuous service. Relief port to be located, sized, and installed by Walk-in Manufacturer
26. KEC to field verify all horizontal/vertical measurements and conditions at the building prior to fabrication or delivery of equipment.
27. KEC to provide 1 year walk-in panel installation warranty. KEC is responsible for overall install accuracy/quality and quality control of work performed regardless of installer or any field modifications due to building/construction conditions. KEC to provide Letter of Install Approval to FDP upon completed install.
28. Manufacturer to provide one year parts and labor warranty.
29. ***-CRITICAL- Installer to verify continuous and proper operation of all door heaters and pressure relief ports.***
30. ***-CRITICAL- Required: Manufacturer Representative to provide training on controls and inside emergency release mechanisms.***
31. Provide safety/emergency placards at exterior and interior of cooler/freezer door assembly. Signage to be mounted on door at ADA level when a window is not present or below view window when window is included.

ITEM NO. 119 TWO COMPARTMENT SINK W. SCRAP SINK

QUANTITY 1

Manufacturer:	Custom Fabricated
Model:	---
Size and Shape:	Refer to drawings
Alternate:	---

1. Open base construction.
2. 10" high splash where adjacent to walls/fixtures.
3. Two (2) 24" x 26" x 15" deep sink compartments.

4. One (1) T&S model no. B-0291, splash mount faucet, 18" swing nozzle,LL inlets, for ¾" hot and cold water connections.
5. Two (2) T&S B-3952-01 twist waste valve 3 1/2" x 2" with overflow and tailpiece. Provide 18 gauge S/S bracket for drain handle welded to sink bottom.
6. 16 gauge S/S undershelf per drawings.
7. Scrap Sink - installed in top integrally welded disposer cone. Notch and punch splash turn back for vacuum breaker. 12 gauge S/S bracket mounted below counter top for disposer control panel ground and polished to match top.
8. Provide One (1) T&S model no. B-0133-01-44H, two (2) B-0109-04 18" long wall bracket (dealer to cut to correct length), one (1) additional spray face model no. 108SFRK with ceramic cartridges.
9. 12" deep single post mounted overshelf at 18" above counter top, punched to accommodate spray rinse.
10. Post mounted utensil rack, extend 1-5/8" diameter S/S post from back splash, turn forward 12" and weld full length x 2" x ¼" S/S bar with Component Hardware model no. V-77-4401 S/S sliding hooks at 8" on center. Verify height with owner.
11. When shown, provide One (1) Chicago model no. 305-VBR hose bibb and rack mounted on 12 gauge S/S flanged ground and polished to match top. Hose and spray nozzle by owner.
12. Omit rear rail at sink compartments, disposer and front rail at hose bibb.
13. Two (2) "Richlite" ½" thick removable sink covers installed at each sink. Weld ¼" bar stock, set 5/8" below work surface at all four corners for support of sink covers. Two (2) finger holes per board.
14. Provide top and bottom c-channel support storage for sink covers at right or left end of counter.
15. One (1) Edlund model no. S-11 Manual can opener, mounted on raised platform.
16. Flanged feet at front only.
17. Seal at all splash penetrations.
18. Coordinate item #708 S914 scrap collector.

ITEM NO. 130 WORKTABLE NO OVERSHELF

QUANTITY 1

Manufacturer: Custom Fabricated
Model: ---
Size and Shape: Refer to drawings
Alternate: ---

1. Top: 14 gauge type 304 S/S, 6" high backsplashat walls, 2" turndown at free sides. Close back of splash when exposed.
2. Open base construction.
3. 16 gauge S/S undershelf.
4. One (1) 20" W x 20" L drawer assembly. Component Hardware #S52-2020 drawer slides with delrin bearings - 200lb capacity. Component Hardware #S81-2020C drawer pan.
5. 6" S/S adjustable feet.

ITEM NO. 139 INSUL. MOBILE PROOFER

QUANTITY 1

Manufacturer: CresCor
Model: H-137-WSUA-12D

Size and Shape: Refer to drawings
Alternate: Metro, FWE

1. Insulated proofer/heated cabinet.
2. Field reversible doors.
3. Adjustable universal angles.
4. Four (4) 5" casters, two (2) with brakes.
5. Tempered glass door windows.
6. Key lock handle.
7. Corner bumpers.
8. Cord and plug. Coordinate NEMA configuration with Electrician.
9. Thermometer.
10. 1500 watt heater.

ITEM NO. 144 WORKTABLE W. DBL.BAR UT.RACK

QUANTITY 2

Manufacturer: Custom Fabricated
Model: ---
Size and Shape: Refer to drawings
Alternate: ---

1. Top: 14 gauge type 304 S/S, 2" turn down at all sides.
2. Open base construction.
3. Full length 16 gauge S/S undershelf.
4. Four (4) 20" W x 20" L drawer assemblies. Component Hardware #S52-2020 drawer slides with delrin bearings - 200lb capacity. Component Hardware #S81-2020C drawer pan.
5. Flanged feet.
6. Post mounted utensil rack, extend 1-5/8" diameter S/S post from cross rail, thru top to 78" A.F.F. and weld full length x 2" x ¼" S/S bar with Component Hardware model no. V-77-4401 S/S sliding hooks at 8" on center. Verify height with Owner. 48" max. upright post spacing.
7. Provide a duplex receptacle and housing mounted below countertop per drawings. Interconnect and prewire a 5'-0" cord and plug out of receptacle housing for plugging into ceiling drop cord receptacle. 114000 and Div. 26 to coordinate location of drop cord receptacle.

ITEM NO. 151 FIRE PROTECTION SYSTEM

QUANTITY 1

Manufacturer: Ansul
Model: R102
Size and Shape: Refer to drawings
Alternate: ---

1. Duct and plenum protection to exhaust hood.
2. Surface protection for cooking equipment.
3. Locate remote fire pulls as recommended by Fire Marshal.
4. One (1) lot Mechanical gas valve (maximum diameter as required). Size as required. Furnished by Section 114000, installed by Division 22. Kitchen Equipment Contractor to coordinate location with local Fire Marshal requirements prior to submittal review. All conduits to be recessed within wall, SURFACE MOUNTING WILL NOT BE ACCEPTED.

5. System to meet U.L. 300 requirements.
6. Provide one (1) hand held Type 'K' and ABC 6 liter fire extinguisher per Ansul System, surface wall mounted. Verify mounting locations as required.
7. Exposed pipe threads are unacceptable.
8. All exposed piping to be chrome plated.
9. All hood penetrations to have U.L. listed "Quick Seal". Provide s/s escutcheons at all hood penetrations.
10. Provide phenolic I.D. labels for exhaust hood, remote fire pull, light/fan switches and fire protection system.
11. Provide a manufacturer performance test and report that verifies this system is fully operational.
12. Provide s/s cabinet as shown on plan.
13. Installer to provide one (1) Ansul system per exhaust hood, review drawings and provide systems as required.
14. Install hand held extinguishers, maximum of 3'-2" A.F.F. to top of unit.

ITEM NO. 152 EXHAUST HOOD

QUANTITY 1

Manufacturer:	Mod-U-Serve
Model:	W-CPB
Size and Shape:	Refer to drawings
Alternate:	---

1. Size and shape as per plan.
2. Supply Air. Ceiling mounted supply plenumwith light fixtures, coordinate conditioned/tempered air with engineer. Locate supply plenum in ceiling, coordinate location with GC as required.
3. U.L. Listed and fire rated 48” recessed LED lights located within the hood canopy. To meet minimum requirements of 50’ candles of illumination.
4. Simple on/off switches for hood fans and lights to be provided by Division 26. Control panels will not be accepted.
5. Hood to meet requirements of ALL current local Mechanical and local Energy Codes.
6. Collars to be field installed. Coordinate with existing conditions and install as approved by Hood manufacturer.
7. All 18 gauge S/S construction. S/S finish where exposed.
8. For extended cooking line-ups provide Continuous Capture canopies without partitions between hoods.
9. Hood to have insulated front face and ends to allow for ceiling grid attachment where ceiling grid meets hood capture area.
10. S/S filters and grease cup. Provide filter removal tool.
11. ½" diameter steel hanger rods at 4'-0" O.C. maximum to be by Kitchen Equipment Supplier, but they are to be anchored to supporting structure (or slab) by the General Contractor in the locations required by exhaust hood shop detail.
12. All hood penetration to be fire rated and U.L. Listed and sealed with s/s escutcheons.
13. S/S c-channel closure panel from top of hood to ceiling.
14. S/S filler panel between hoods if back-to-back.
15. 4" air space at rear of hood. Provide S/S finished back where rear air space would otherwise be exposed.

16. Ductwork and final connection to hood above ceiling to be by the Mechanical Contractor.
17. Clearance requirement: Where any exterior surface of a hood is installed less than 18" from a combustible or semi-combustible surface, provide a minimum of 4" air space containing a code approved fire resistant material to that surface in a manner as prescribed by the manufacturer of that fire-resistant material. Protective materials provided by 3M Fire Barrier Duct Wrap 615+ and Fry Ware Elite are compliant with state and local mechanical codes. In addition, both systems meet the requirements of the testing standards of ASTM E2336 AND ARE THEREFORE APPROVED TO BE USED IN CLEARANCE REDUCTION APPLICATIONS.
18. Provide Mod-U-Serve model number ASTS-90 pre-set temperature sensor for automatic start of exhaust fan when the condition exists where the exhaust fan is not initiated at the wall switch and the temperature in the exhaust canopy reaches 110 degrees F. At the end of the cooking day when the fan is disengaged at the wall switch the thermostat (temperature sensor) will keep the exhaust fan on until the temperature in the exhaust canopy drops below 110 degrees F.
19. Provide minimum 18-gauge stainless steel non-insulated flat wall panel. Extend from top of cove base to underside of hood. Provide with panels, "T" type joining strips at interior seams and "C" type strips at outside panel ends. Wall panels to extend the full length of the hood or to top of half wall.
20. Refer to individual hood lengths as shown on drawings for each assembly required. Install at 6'-10" A.F.F. to bottom of hood, coordinate duct and fan requirements with Mechanical Contractor. Interconnect to wall mounted light switch by Division 26. Bulbs for light fixtures to be furnished and installed by Kitchen Equipment Contractor.
21. Mechanical contractor to test and balance exhaust hoods. Balance report to be provided to FDP upon completion.
22. **Special Instruction:** Refer to individual hood and plenum box lengths as shown on drawings for each assembly required. Install bottom of hood at 6'-10" A.F.F. Install plenum boxes recessed and interconnect to wall mounted light switch by Division 26.

ITEM NO. 161 CONVECTION OVEN- GAS DBL

QUANTITY 1

Manufacturer:	Blodgett
Model:	DFG-200 DBL
Size and Shape:	Refer to drawings
Alternate:	Vulcan

1. S/S front, top and sides.
2. Two (2) 1/2 HP 2-speed motors.
3. Natural gas.
4. SSI-M solid state infinite control with manual timer.
5. Electronic spark ignition.
6. Five (5) oven racks per compartment.
7. Dual pane thermal windows.
8. Simultaneous door operation.
9. Heavy duty casters, two (2) with brakes.
10. Provide quantities and sizes required: Dormont Model #VER-KITCF-2S-48” Gas Conn. Kit, 48” long, dble. Supr-Swivel coupling with SafetyQuick safety fitting, w/coiled restraining device, full port gas valve, antimicrobial coating, lifetime warranty.

11. Dedicated gas connections, do not manifold.
12. Shunt trip breaker by Division 26.
13. Provide Eagle model CC-S, Stainless Steel Caster Cradle Stabilizing Device for all mobile production equipment under the exhaust hoods. Coordinate locations with the Owner prior to installation. Quantity One (1) equals One (1) lot. Alternate: Regency Stainless Steel Caster Placement System, model #600Safetyset.

ITEM NO. 162 CONVECTION STEAMER - GAS DBL

QUANTITY 1

Manufacturer:	Cleveland
Model:	(2) 22CGT66.1 Double
Size and Shape:	Refer to drawings
Alternate:	Groen

1. SteamChef™ 6 Convection Steamer, Gas, boilerless, double stacked, twelve (12) pan capacity. Stainless steel exterior, UL, NSF, and ENERGY STAR® rated.
2. Two (2) compartments each with individual connections.
3. 60-minute electro-mechanical timer & manual (continuous steaming) bypass switch.
4. Automatic drain & water level controls, KleanShield™ interior.
5. Model #ES26304466G equipment stand, 4" adjustable legs with flanged feet.
6. Three (3) year parts and labor warranty for K12 with use of water treatment system.
7. Provide sizes and quantities as required: Dormont s/s water disconnect from filter to steamer,color coded for filtered and non-filtered water.
8. KEC to coordinate filtered and unfiltered water with steamer, do not connect filtered water to unfiltered water connection.
9. Coordinate location; Floor sink to be outside equipment footprint and outside steam-free zone. Division 26 to provide shunt trip breaker.

ITEM NO. 163 30 GAL. TILT BRAISING PAN- GAS MANUAL TILT

QUANTITY 1

Manufacturer:	Cleveland
Model:	SGL30T1
Size and Shape:	Refer to drawings
Alternate:	Groen

1. PowerPan tilt braising pan with easyDial Controls, selector dial with LED ring, large display screen.
2. Easy manual tilt, spring-assisted cover with vent.
3. Open leg frame.
4. S/S construction.
5. Steamer pan inserts.
6. Pan carrier.
7. Etch marks.
8. Flanged feet. Secure rear to floor with non-corrosive anchors.
9. Provide quantities and sizes required: Dormont Model #VER-KITCF-2S-48” Gas Conn. Kit, 48” long, dble. Supr-Swivel coupling with SafetyQuick safety fitting, w/coiled restraining device, full port gas valve, antimicrobial coating, lifetime warranty.
10. Flanged feet.

11. Trench Liner to consist of:
12. S/S trench liner by 114000. Installation by G.C.
13. IMC/Teddy or Custom Fabrication.
14. Fibergrate: Gray #2 1" Thick, 1 1/2" squares mesh, Quartz grit top. Provide in two (2) equal sections, all ends to be finished ends.
15. 14 gauge s/s liner
16. IMC Teddy model no. BSPC basket strainer with pullout handle and chain.
17. Location of trench liner is critical. G.C. and 114000 to verify location prior to concrete pour. Oversize trench liner block out to accommodate equipment pour path.

ITEM NO. 167 MOBILE WORKTABLE

QUANTITY 2

Manufacturer:	Custom Fabricated
Model:	---
Size and Shape:	Refer to drawings
Alternate:	---

1. Top: 14 gauge type 304 S/S with 2" turndown at all sides.
2. Open base construction.
3. 16 gauge S/S undershelf per drawings.
4. Two (2) 20" W x 20" L drawer assemblies. Component Hardware #S52-2020 drawer slides with delrin bearings - 200lb capacity. Component Hardware #S81-2020C drawer pan.
5. 5" N.S.F. approved non-marking swivel casters, two with brakes.

ITEM NO. 169 SS CORNER GUARDS

QUANTITY 1

Manufacturer:	Custom Fabricated
Model:	---
Size and Shape:	Refer to drawings
Alternate:	---

1. Quantity (1) equals One Lot, located on every outside corner within kitchen.
2. 18 ga. stainless steel corner guards located at all exposed corners of kitchen. 48" tall. Located at all corners within the kitchen area. Secure to wall with hidden fasteners.

ITEM NO. 186 PASS-THRU HEATED CABINET- 1DR

QUANTITY 1

Manufacturer:	Traulsen
Model:	HF-132WP
Size and Shape:	Refer to drawings
Alternate:	Utility

1. Anodized aluminum interior and S/S exterior.
2. Interior lights with bulbs.
3. Exterior digital thermometer.
4. Locking hardware.

5. EZ-Clean Tray racks, for 18" x 26", 14" x 18" or 12" x 20" pans. Provide a total of (12) levels for each section.
6. 6" high adjustable S/S legs.
7. Furnish start-up and Six (6) year parts and labor warranty.
8. Controls mounted on kitchen side.
9. Half height doors hinged as per plan. Glass doors located on kitchen side, solid doors located on server side.
10. Re-hinging feature.
11. Omit plug. Unit to be Hard Wired.
12. **Special Instruction:** Provide opening in wall 2" taller than equipment and 2" wider, KEC to coordinate with GC as required. Trim is not to be secured to the equipment.

ITEM NO. 188 PASS-THRU REFRIGERATOR - 1DR

QUANTITY 1

Manufacturer: Traulsen
Model: HT-132WPUT
Size and Shape: Refer to drawings
Alternate: Utility

1. Anodized aluminum interior and S/S exterior.
2. Interior lights with bulbs.
3. Exterior digital thermometer.
4. Locking hardware.
5. EZ-Clean Tray racks, for 18" x 26", 14" x 18" or 12" x 20" pans. Provide a total of (12) levels for each section.
6. 6" high adjustable S/S legs.
7. Furnish start-up and Six (6) year parts and labor warranty.
8. Controls mounted on kitchen side.
9. Five (5) Year compressor warranty.
10. Half height doors hinged as per plan. Glass doors located on kitchen side, solid doors located on server side.
11. Re-hinging feature.
12. Omit plug. Unit to be Hard Wired.
13. **Special Instruction:** Provide opening in wall 2" taller than equipment and 2" wider, KEC to coordinate with GC as required. Trim is not to be secured to the equipment.

ITEM NO. 209 DROP FRONT MILK COOLER - 8 CASE

QUANTITY 1

Manufacturer: Mod-U-Serve
Model: MCT-DM1
Size and Shape: Refer to drawings
Alternate: Traulsen

1. 18 gauge S/S fully welded liner.
2. 20 gauge S/S exterior.
3. Double pan insulated doors.
4. High pressure insulated foam.
5. 5" casters, two (2) with brakes.

6. ½" S/S nipple drain.
7. Locking mechanism.
8. Cord and plug. NEMA - 5-15P.
9. Corner bumpers.
10. 8 case capacity.
11. Strip curtains.
12. **Special Instruction:** Coordinate location of electrical receptacle so as to not interfere with location of milk dispenser.

ITEM NO. 214 CASH REGISTER

QUANTITY 1

Manufacturer:	Owner Furnished
Model:	---
Size and Shape:	Refer to drawings
Alternate:	---

ITEM NO. 255 MOBILE DRYING RACK

QUANTITY 1

Manufacturer:	Metro
Model:	PR48VX3
Size and Shape:	Refer to drawings
Alternate:	---

1. Four (4) tier, includes two (2) drop-ins and (1) cutting board/tray drying rack, built in Microban antimicrobial product protection.
2. Two (2) no. 5MPX casters per unit.
3. Two (2) no. 5MPBX locking casters per unit.

ITEM NO. 256 POWERWASH SINK

QUANTITY 1

Manufacturer:	Power Soak
Model:	PSU6
Size and Shape:	Refer to drawings
Alternate:	Hobart Turbo Wash

1. Size shape and arranger per plan, elevation, sections, and details.
2. Type 304 stainless steel construction throughout.
3. #14 gauge sinks, drain boards, splashes and channel rims.
4. One low-profile wash jet per every six inches of wash sink length.
5. All wetted parts, including pump housing and impeller are to be stainless steel.
6. 7000-watt heater located in wash sink.
7. Stainless steel Powered Utensil Basket.
8. Wash sink to be 5’-0” unless otherwise specified or noted.
9. Two (2) T&S model no. B-0291, splash mount faucet, 18" swing nozzle, LL inlets, for ¾" hot and cold water connections. Faucets to have antimicrobial finishes. Provide ceramic valves with inline check valves.
10. One (1) Component Hardware KN60-1000BS pre-rinse assembly, 18" long wall bracket (dealer to cut to correct length), one (1) additional spray face with ceramic cartridges. Faucets to have antimicrobial finishes. Provide ceramic valves with inline check valves.

11. Two (2) Fisher model no. 22314-lever handle drain with connected overflow and tailpiece. Provide 18 gauge stainless steel bracket for drain handle welded to sink bottom.
12. Solid state controller and control components.
13. Universal Programming Module completely encapsulated and waterproof.
14. Motor horsepower 3 hp.
15. Zero retained water in the pump or manifold when system is drained
16. Modular design to allow easy access to motor and all major components.
17. Removable Stainless steel sheet pan racks per Irving ISD requirements.
18. 16-gauge stainless steel overshelf per plans. Shelf to be located to accommodate removal of sheet pans.
19. Single bar post mounted utensil rack per plans, extend 1 5/8" diameter stainless steel post from back splash, turn forward 12" and weld full length x 2" x 1/4" stainless steel bar with Component Hardware model no. J-77-4401 stainless steel sliding hooks at 8" on center.
20. Chemical Soap dispenser/pumps.
21. Coordinate item #708 P914 scrap collector.

ITEM NO. 262 HAND SINK - WALL MTD

QUANTITY 3

Manufacturer:	Aero
Model:	HSF Modified
Size and Shape:	Refer to drawings
Alternate:	Advance Tabco, Eagle

1. Hand Sink, wall model, 14" wide x 10" front-to-back x 5" deep bowl.
2. 3 1/2" gooseneck splash mount faucet with wrist blade operation.
3. Basket drain and wall bracket.
4. P-Trap assembly, delete open/close drain valve.
5. Soap and Towel Dispensers by Owner.
6. Custom fabricated removable end splashes on sides as required by code. Height same as the rear splash.
7. Division 22 to provide temperature adjustment valves as required

ITEM NO. 263 REMOTE WATER FILTER SYSTEM

QUANTITY 1

Manufacturer:	3M
Model:	---
Size and Shape:	Refer to drawings
Alternate:	---

1. Multiple filter assembly to serve all cold water equipment, including one (1) *double stack convection steamer and one (1) ice machine.*
2. Provide two (2) sets of additional filters.
3. Shall have 20” coarse filter.
4. ½ micron Fiberdyne filtration technology with scale inhibition.
5. Inlet water shut off valve, flushing valve, inlet/outlet pressure gauges and dual outlets.
6. Manufacturer to size unit to accommodate equipment as required.
7. Manufacturer to provide shop drawings showing all water connections.
8. Manufacturer to make site visits to coordinate installation by G.C.

9. Factory to provide water testing of local area to confirm requirements to accommodate manufacturers recommendations. Provide as a complete operating system, no additional cost will be provided during the installation process.

ITEM NO. 300 HOT COLD WELLS

QUANTITY 1

Manufacturer:	ModuServe
Model:	MCT-HC Dallas
Size and Shape:	Refer to drawings
Alternate:	CounterCraft

1. Refer to drawings for size and shape.
2. Serving counters to consist of the below items and to meet Dallas I.S.D. district standards
3. Countertop located at 34" a.f.f., recess countertop at hot food counter to accommodate sheet pans.
4. One (1) lot Hot/Cold Individual well with control located per drawing. Bottom mount with flush mount pans, stainless steel, sealing gasket and drains at each well. Capacities to accommodate standard sheet pan. Single pantry faucet located to accommodate all wells, pre-piped within counter for single point connection below undershelf. S/S water flex hose length to be provided to accommodate all wells.
5. Adjustable single tier sneeze guard with mirror finish, led lights, three (3) sections of heat lamps to accommodate each area, 3/8" tempered glass.
6. Counter to be prewired for a single point connection.
7. Corian trayslide with s/s runners, locate at 34" a.f.f. verify color with architect.
8. Counter fronts to include substrate to accommodate tile by manufacture.
9. S/S adjustable legs.
10. S/S adjustable kickplates.

ITEM NO. 302 HEATED TOP

QUANTITY 1

Manufacturer:	ModuServe
Model:	Custom
Size and Shape:	Refer to drawings
Alternate:	CounterCraft

1. Refer to drawings for size and shape.
2. Serving counters to consist of the below items and to meet Dallas I.S.D. district standards
3. Countertop located at 34" a.f.f., to be level with trayslide.
4. Heated top to accommodate 18" x 26" sheet pan with 2 CM stone inset, submit/verify color with architect.
5. Adjustable sneeze guards with heated top located in top glass sneeze guard, s/s mirror finish at posts, LED lights with heat lamps at hot food wells, 3/8" tempered polished tempered glass.
6. Counter to be prewired for a single point connection.
7. Convenience outlet located in skirt of counter.
8. Corian trayslide with s/s runners, locate at 34" a.f.f. Verify color with architect.
9. Counter fronts to include substrate to accommodate tile by manufacture.
10. S/S adjustable legs.
11. S/S adjustable kickplates.

ITEM NO. 303 FROST TOP

QUANTITY 1

Manufacturer:	ModuServe
Model:	Custom
Size and Shape:	Refer to drawings
Alternate:	CounterCraft

1. Refer to drawings for size and shape.
2. Serving counters to consist of the below items and to meet Dallas I.S.D. district standards
3. Countertop located at 34" a.f.f.
4. Frost top to accommodate 18" x 26" sheet pan with 2 CM stone inset, submit/verify color with architect.
5. Two (2) Post mounted raised frost tops with drain. Frost tops to be self contained, slanted top to display owners product, refer to drawings for location. Size to accommodate 18" x 26" sheet pan. Locate 19 1/2" above countertop. 2 CM stone inset, submit & verify color with architect.
6. Counter to be prewired for a single point connection.
7. Convenience outlet located in skirt of counter.
8. Corian trayslide with s/s runners, locate at 32" a.f.f.
9. Counter fronts to include substrate to accommodate tile by manufacture.
10. S/S adjustable legs.
11. S/S adjustable kickplates.

ITEM NO. 304 CASHIER COUNTER

QUANTITY 1

Manufacturer:	ModuServe
Model:	Custom
Size and Shape:	Refer to drawings
Alternate:	CounterCraft

1. Refer to drawings for size and shape.
2. Cashiers station to accommodate owners POS System and built-in cashiers drawer per districts standards.
3. Serving counters to consist of the below items and to meet Dallas I.S.D. district standards
4. Countertop located at 34" a.f.f.
5. Counter to be prewired for a single point connection.
6. Convenience outlet located in skirt of counter.
7. Corian trayslide with s/s runners, locate at 32" a.f.f.
8. Counter fronts to include substrate to accommodate tile by manufacture.
9. S/S adjustable legs.
10. S/S adjustable kickplates.

ITEM NO. 614 FILL FAUCET

QUANTITY 1

Manufacturer:	T & S
Model:	B-0610
Size and Shape:	Refer to drawings
Alternate:	---

1. Pot Filler Faucet, splash-mounted, 8" centers, vacuum breaker, flexible S/S hose, 60" long, hooked nozzle with self-closing valve, ½" IPS female inlets, built-in check valves.
2. 12" square 12 ga. S/S wall plate with hose rack with radius corners.
3. Install at 48" A.F.F. by Division 22. Coordinate height of backflow preventor with highest water level of associated equipment.

ITEM NO. 615 MENU MONITOR

QUANTITY 2

Manufacturer:	OWNER FURNISHED / CONTRACTOR INSTALLED
Model:	---
Size and Shape:	Refer to drawings
Alternate:	---

ITEM NO. 708 SCRAP COLLECTOR

QUANTITY 2

Manufacturer:	Salvajor
Model:	P914/S914
Size and Shape:	Refer to drawings
Alternate:	Insinkerator

1. Scrap Collector to be scrapping, pre-flushing and food waste collecting system with re-circulating water.3/4 HP motor.
2. Pot/Pan Scrap basin. Fully welded to soiled dishtable.
3. Provide additional scrap basket.
4. Automatic Water Blender.
5. Solenoid valve.
6. Unions.
7. Check Valves, Incoming Water Valves.
8. Backflow prevention device.
9. Non-clogging pump design.Model no. MSS-LD remote control panel with mounting bracket.
10. Delete standard syphon breakers and provide T & S B-0456-04 vacuum breakers and mount 6” from tabletop to base of breaker.
11. Install vacuum breaker in splash.
12. Utilities provided as shown in Contract Documents.

END OF EQUIPMENT LIST

SECTION 142400 - MACHINE ROOM-LESS HYDRAULIC PASSENGER ELEVATOR

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: Machine Room-Less Hydraulic Passenger Elevator
   1. Standard pre-engineered hydraulic passenger elevators.
   2. Elevator car enclosures, hoistway entrances and signal equipment.
   3. Operation and control systems.
   4. Jack(s).
   5. Accessibility provisions for physically disabled persons.
   6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
   7. Materials and accessories as required to complete the elevator installation.

B. Related Requirements:
   1. Section 033000 "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
   2. Section 051200 "Structural Steel Framing" for the following:
      a. Attachment plates, angle brackets, and other preparation of structural steel for fastening guide-rail brackets.
   3. Section 055000 "Metal Fabrications" for the following:
      a. Attachment plates and angle brackets for supporting guide-rail brackets.
      b. Hoist beams.
      c. Structural-steel shapes for subsills.
      d. Pit ladders.
   4. Section 071326 “Self-Adhering Sheet Waterproofing (WP-5 and WP-5A)” for elevator pit waterproofing.
   5. Section 096519 “Resilient Tile Flooring” for finish flooring in elevator cars.
   6. Section 099010 “Painting” for field painting of hoistway entrance doors and frames.
   7. Division 16 for electrical and lighting components
   8. Division 22 for sump pumps, sumps, and sump covers in elevator pits.
   9. Division 23 for HVAC
   10. Division 27 for twisted pair cabling for telephone service for elevators and for connection to elevator controllers for remote monitoring of elevator performance.
   11. Division 28 for smoke detectors in elevator lobbies to initiate emergency recall operation, for heat detectors in shafts and machine rooms to disconnect power from elevator equipment on or before sprinkler activation, and for connection to elevator controllers.

C. Products Installed but Not Furnished Under This Section: General contractor shall provide the following in accordance with the requirements of the International Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Part 3 for hydraulic elevators. State or local requirements must be used if more stringent.
   1. Elevator hoist beam to be provided at top of elevator shaft. Beam must be able to accommodate proper loads and clearances for elevator installation and operation.

2. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.
3. Hatch walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2" at any point.
4. Elevator hoistways shall have barricades, as required.
5. Install bevel guards at 75° on all recesses, projections or setbacks over 2" (4" for A17.1 2000 areas) except for loading or unloading.
6. Provide rail bracket supports at pit, each floor and roof. For guide rail bracket supports, provide divider beams between hoistway at each floor and roof.
7. Pit floor shall be level and free of debris. Reinforce dry pit to sustain normal vertical forces from rails and buffers.
8. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-combustible material extending 42" minimum, (48" minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.
9. All wire and conduit should run remote from the hoistways.
10. When heat, smoke or combustion sensing devices are required, connect to elevator control cabinet terminals. Contacts on the sensors should be sided for 12 volt D.C.
11. Install and furnish finished flooring in elevator cab.
12. Finished floors and entrance walls are not to be constructed until after sills and door frames are in place. Consult elevator contractor for rough opening size. The general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained, when drywall construction is used.
13. Where sheet rock or drywall construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.
14. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.
15. To maintain legal fire rating (masonry construction), door frames are to be anchored to walls and properly grouted in place.
16. The elevator wall shall interface with the hoistway entrance assembly and be in strict compliance with the elevator contractor's requirements.
17. General Contractor shall fill and grout around entrances, as required.
18. Elevator sill supports shall be provided at each opening.
19. All walls and sill supports must be plumb where openings occur.
20. For applications with jack hole, free and clear access to the elevator pit area for the jack hole-drilling rig is required.
21. Where jack hole is required, remove all spoils from jack hole drilling.
22. When not provided by Elevator Contractor, jack hole shall accommodate the jack unit. If required the jack hole is to be provided in strict accordance with the elevator contractor's shop drawings.
23. Locate a light fixture (200 lx / 19 fc) and convenience outlet in pit with switch located adjacent to the access door.
24. A light switch and fused disconnect switch for each elevator should be located inside the machine room adjacent to the door, where practical, per the National Electrical Code (NFPA No. 70).
25. For signal systems and power operated door: provide ground and branch wiring circuits, including main line switch.
26. For car light and fan: provide a feeder and branch wiring circuits, including main line switch.
27. Wall thickness may increase when fixtures are mounted in drywall. These requirements must be coordinated between the general contractor and the elevator contractor.
28. Provide supports, patching and recesses to accommodate hall button boxes, signal fixtures, etc..
29. Locate telephone and convenience outlet on control panel.

1.3 DEFINITIONS

A. Definitions in ASME A17.1/CSA B44 apply to work of this Section.

B. Service Elevator: A passenger elevator that is also used to carry freight.

1.4 ACTION SUBMITTALS

A. Product Data: Machine Room-Less Hydraulic Passenger Elevator

B. Product Data Submittals: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for car enclosures; hoistway entrances; and operation, control, and signal systems.

C. Shop Drawings:
1. Provide scaled shop drawings of the following:
    a. Plan and section layouts of hoistways, pits, overheads, machinery spaces and openings at each landing, to include the following:
        1) Location of all equipment.
        2) Static and dynamic loads imposed on building structure.
        3) Details of equipment isolation.
        4) Required clearances around equipment.
        5) Power requirements:
            a) motor horsepower, code letter, starting current, full load running current, and demand factor.
            b) Provide engineered power consumptions based on 180 starts per hour.
            c) Provide maximum and average power consumption.
        6) Service connections.
        7) Running Clearances.
        8) Location of fixtures.
    b. Elevation section of hoistways:
        1) Overhead, pits: clearances, and run-by.
        2) Entrance details.
        3) Sill support detail.
    c. Pit Equipment:
        1) Buffers.
        2) Counterweight guards.
        3) Pit reactions.
        4) Service ladder
        5) Stop switches.
    d. Elevator cabs:
        1) Car shell fabrication.
        2) Gasketing.
        3) Ventilation.
        4) Ceiling construction details.
        5) Wall construction details.
        6) Lighting details.
        7) Handrail mounting details.
        8) Transom, entrance returns.
    e. Fixtures:
        1) Car operating panel.
        2) Hall stations.
        3) Destination / landing input stations.
        4) Hall Lanterns.
        5) Position indicators.
        6) Access key switches.

7) Remote fixtures.
   a) Lobby Desk panel.
   b) Firefighter's Control Panel.
   c) Emergency Power selector switches.
8) Two-way communication device at all master stations

D. Samples for Initial Selection: For finishes involving color selection.

E. Samples for Verification: For exposed car, hoistway door and frame, and signal equipment finishes, 3-inch-square Samples of sheet materials and 4-inch lengths of running trim members.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Manufacturer Certificates: Signed by elevator manufacturer, certifying that hoistway, pit, and machine room layout and dimensions, as indicated on Drawings, and electrical service, as indicated and specified, are adequate for elevator system being provided.

C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.

1. Submit manufacturer's/installer's standard operation and maintenance manual, in accordance with ASME A17.1/CSA B44 including diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.

B. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

C. Continuing Maintenance Proposal:

1. Submit a continuing maintenance proposal from Installer to Owner, in the form of a standard one-year maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.7 QUALITY ASSURANCE

A. Installer and Manufacturer Qualifications: An approved manufacturer with a minimum 15 years of experience in manufacturing, installing, and servicing elevators of the type required for the project.

B. Fire-rated entrance assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(b), and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

C. Inspection and testing:
1. Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
2. Arrange for inspections and make required tests.

3. Deliver to the Owner upon completion and acceptance of elevator work.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials, components and equipment in manufacturer's protective packaging. Store materials, components, and equipment off of ground, under cover, and in a dry location.

1.9 COORDINATION

A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.

B. Coordinate locations and dimensions of other work specified in other Sections that relates to hydraulic elevators, including pit ladders; sumps and floor drains in pits; entrance subsills; electrical service; and electrical outlets, lights, and switches in hoistways, pit.

1.10 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair, restore, or replace elevator work that fails in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
2. Warranty Period: 1 year from date of Substantial Completion.

1.11 WARRANTY

A. Furnish maintenance and call back service for a period of 12 months for each elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours excluding callbacks.

1. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours.
2. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
3. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

PART 2 - PRODUCTS

2.1 MACHINE ROOM-LESS HYDRAULIC PASSENGER ELEVATOR

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Basis of Design: Thyssen Krupp (TDK); model Endura 35 A HMRL
2. Otis Elevator
3. Vertical Express
4. RIO Elevator Company
5. Architect approved equal

B. Source Limitations: Obtain elevators from single manufacturer.

1. Major elevator components, including pump-and-tank units, plunger-cylinder assemblies, controllers, signal fixtures, door operators, car frames, cars, and entrances, are manufactured by single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with ASME A17.1/CSA B44.

B. Accessibility Standard: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC A117.1.

C. Seismic Performance: Elevator system withstands the effects of earthquake motions determined according to ASCE/SEI 7 and complies with elevator seismic requirements in ASME A17.1/CSA B44.

1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event."

2.3 ELEVATORS

A. Elevator System, General: Manufacturer's standard elevator systems. Unless otherwise indicated, manufacturers' standard components are used, as included in standard elevator systems and as required for complete system.

B. Elevator Descriptions:
1. Quantity: 1
2. Elevator Number: As indicated on Drawings
3. Model: Endura 35 A HMRL
4. Type: In-Ground oil hydraulic
5. Loading Class: Passenger
6. Car Speed: 150 FPM
7. Main Power Supply:
   a. Voltage: 480
   b. Phase: Voltage: 3
   c. Hertz: 60
8. Entrance Size: Front - 3’ 6” wide x 7’ 0” high
9. Entrance Type: Single speed, <u>side opening</u> ~~center opening~~
10. Number of Stops: 1
11. Minimum Clear Car Inside: 6’-8” wide x 5’-5” deep
12. Inside Cab Height: Not less than 93 inches to underside of ceiling.
13. Capacity: 3500 Lbs.
14. Hoistway Entrances:
    a. Width: 3’-6”
    b. Height: 7’-0”
    c. Type: Single-speed side opening
15. Total Travel: 15’-0”

16. Clear Overhead: minimum 12'–9"
17. Pit Depth: minimum 4'-0"
18. Seismic Zone: 1
19. Operation: Simplex
    Simplex Collective: Using a Non-Proprietary microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.
20. Auxiliary Operations:
    d. Battery-powered lowering.
    e. Automatic dispatching of loaded car.
    f. Nuisance call cancel.
    g. Automatic operation of lights and ventilation fans.

C. Car Enclosure Finishes:
1. Walls: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
2. Car Fixtures: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
3. Door Faces (Interior): Satin stainless steel, ASTM A480/A480M, No. 4 finish.
4. Door Sills: Aluminum.
5. Ceiling: Satin stainless steel, ASTM A480/A480M, No. 4 finish, downlight type, metal pans with suspended LED downlights.
6. Handrails: 1-1/2 inches round,satin stainless steel at back of car only.
7. Floor prepared to receive resilient flooring specified in Section 096519 "Resilient Tile Flooring".
8. Floor Thickness, Including Setting Materials: ¼-inch above plywood subfloor.

D. Hoistway Entrance Finishes:
1. Frames: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
2. Doors and Transoms: Satin stainless steel, ASTM A480/A480M, No. 4 finish.
3. Sills: Aluminum.

E. Hall Fixtures: Satin stainless steel, ASTM A480/A480M, No. 4 finish.

F. Additional Requirements:
1. Provide inspection certificate in each car, mounted under acrylic cover with frame made from satin stainless steel, ASTM A480/A480M, No. 4 finish.
2. Provide hooks for protective pads in all cars and one complete set(s) of full-height protective pads for each car.

2.4 SYSTEMS AND COMPONENTS

A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit consisting of the following items:
1. An oil reservoir with tank cover.
2. An oil hydraulic pump.
3. An electric motor.
4. An oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.

B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating shall be selected for specified speed and load.

D. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
   1. Relief valve shall be adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
   2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
   3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
   4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.
   5. Solid State Starting: Provide an electronic starter featuring adjustable starting currents.

E. Hydraulic Silencers: System has hydraulic silencer containing pulsation-absorbing material in blowout-proof housing at pump unit.

F. Piping: Size, type, and weight of piping as recommended by elevator manufacturer, with flexible connectors to minimize sound and vibration transmissions from power unit.

   1. Cylinder units are connected with dielectric couplings.
   2. Casing for Underground Piping: Schedule 40 PVC pipe complying with ASTM D1785, joined with PVC fittings complying with ASTM D2466 and solvent cement complying with ASTM D2564.

G. Hydraulic Fluid:

   1. Hydraulic Fluid, Manufacturer's Standard: Elevator manufacturer's standard fire-resistant fluid with additives as needed to prevent oxidation of fluid, corrosion of cylinder and other components, and other adverse effects.

H. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.

I. Protective Cylinder Casing: PVC or HDPE pipe casing complying with ASME A17.1/CSA B44, of sufficient size to provide not less than 1-inch clearance from cylinder and extending above pit floor. Casing has means of monitoring effectiveness to comply with ASME A17.1/CSA B44.

J. Car Frame and Platform: Welded or bolted steel units.

K. Guides: Polymer-coated, nonlubricated sliding guides. Provide guides at top and bottom of car frame.

2.5 OPERATION CONTROL SYSTEMS

A. A Non-Proprietary microprocessor-based controller shall be provided along with a solid state starter. Include necessary starting switches together with all relays, switches, solid-state components and hardware required for operation, including door operation, as described herein. A three (3) phase overload device shall be provided to protect the motor against overloading.

B. Auxiliary Operations:

   1. Group Battery-Powered Lowering:

a. When power fails, cars are lowered to the lowest floor, open their doors, and shut down. System includes rechargeable battery and automatic recharging system.

2. Automatic Dispatching of Loaded Car: When car load exceeds 80 percent of rated capacity, doors start closing.
3. Automatic Operation of Lights and Fan: When elevator is stopped and unoccupied with doors closed, lighting, ventilation fan, and cab displays are de-energized after 5 minutes and are re-energized before car doors open.

2.6 DOOR-REOPENING DEVICES

A. Passenger Door Equipment:

1. Door control to open doors automatically when car arrives at a landing in response to a normal hall or car call. Door operation will be automatic at each landing with door opening being initiated as the car arrives at the landing and closing taking place after expiration of a time interval. A car door electric contact will prevent starting the elevator away from the landing unless the car door is in the closed position. Doors will be arranged to remain open for a time period sufficient to meet disability requirements.

2. Elevator doors shall be provided with a reopening device that will stop and reopen the car door(s) and hoistway door(s) automatically should the door(s) become obstructed by an object or person. Primary door protection shall consist of a two dimensional, multi-beam array projecting across the car door opening.

2.7 CAR ENCLOSURES

A. Provide Wall panels, car roof, access doors, power door operators, and ventilation.

1. Provide standard railings complying with ASME A17.1/CSA B44 on car tops where required by ASME A17.1/CSA B44.

B. Materials and Finishes:

1. Subfloor:
   a. Exterior, underlayment-grade plywood, not less than 5/8-inch nominal thickness.
2. Floor Finish:
   a. Specified in Section 096519 “Resilient Tile Flooring”.
3. Stainless Steel Wall Panels: Flush, formed-metal construction; fabricated from stainless steel sheet.
4. Fabricate car with recesses and cutouts for signal equipment.
5. Fabricate car door frame integrally with front wall of car.
6. Stainless Steel Doors: Flush, hollow-metal construction; fabricated from stainless steel sheet.
7. Sight Guards: Provide sight guards on car doors.
8. Sills: Extruded aluminum, with grooved surface, 1/4 inch thick.
9. Ceiling: Stainless steel flush panels, with suspended LED downlights in the center of each panel. Align ceiling panel joints with joints between wall panels.
10. Light Fixture Efficiency: Not less than 35 lumens/W.
11. Ventilation Fan Efficiency: Not less than 3.0 cfm/W.

C. Top of Car Inspection – The elevator shall be provided with an operating device mounted above the cab which will permit slow speed operation for purposes of adjustment, inspection, maintenance, and repair.

2.8 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted\knock down construction.
   1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates (where required), sight guards, and necessary hardware.
   2. Main Landing Door & Frame Finish: Stainless steel panels, no. 4 brushed finish with no. 4 brushed finish entrance frame.
   3. Typical Door & Frame Finish: Stainless steel panels, no. 4 brushed finish with no. 4 brushed finish entrance frame.

B. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

C. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
   1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
   2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
   3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

D. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M.

F. Wiring: Insulated wiring shall have a flame retarding and moisture resisting outer cover and shall run in a metal conduit, metallic tubing or wire ducts. All insulated conduction and conduit, or tubing, as well as fittings including metal boxes, troughs and ducts, shall comply with the requirements of the National Electric Code.

G. General Contractor shall fill and grout around entrances, as required.

2.9 SIGNAL EQUIPMENT

A. Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Provide vandal-resistant buttons and lighted elements illuminated with LEDs.

B. Car Operating Panel: A fixed car operating panel shall be provided which all push buttons, key switches, and message indicators for elevator operation. All buttons to be located per ADA.
   1. Fixture Finish: Stainless Steel no. 4 brushed finish
   2. The car operating panel shall be equipped with the following features including those as required by ASME A.17. 2016 Code
      a. Illuminated LED push buttons
      b. Raised markings and Braille
      c. Digital car position indicator
      d. Door open and door close buttons
      e. Light key-switch
      f. Fan key-switch
      g. Access key-switch
      h. Independent service key-switch
      i. Illuminated alarm button with raised markings
      j. In car stop switch (toggle or key unless local code prohibits use)
      k. Firefighter’s jewel
      l. Firefighter’s phase II key-switch
      m. Emergency light

n. Call cancel button
o. ADA hands-free phone located behind a perforated speaker pattern
p. Push to call button – Shall initiate the hands-free phone between the car and a location inside the building, switching over to another location if the call is unanswered, where personnel are available who can take the appropriate action. Visual indicators are provided for call initiation and call acknowledgement.
q. Firefighter's phase II locked cabinet and emergency in-car operating instructions, worded according to code.

C. Emergency Communication System: Two-way voice communication system, with visible signal, which dials preprogrammed number of monitoring station and does not require handset use. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.

D. Firefighters' Two-Way Telephone Communication Service: Provide flush-mounted cabinet in each car and required conductors in traveling cable for firefighters' two-way telephone communication service specified in Division 28.

E. Car Position Indicator: Provide illuminated, digital-type car position indicator, located above car door or above car-control station. Also, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served. Include travel direction arrows if not provided in car-control station.

F. Hall Push-Button Stations: Hall stations shall be provided with necessary push buttons and key switches for elevator operation. When a button is pressed, it shall illuminate, signaling to the waiting passenger that the call has been registered. Each button shall remain illuminated until the call has been answered. All buttons to be located per ADA.
1. The designated fire return floor shall include a fireman's emergency key switch that meets state and local requirements.
2. Provide for connecting units to building security access system so a card reader can be used to register calls.

G. Hall Lanterns: One lantern per car opening shall be supplied with one gong stroke up and two gong strokes down. As soon as the car has reached a predetermined distance from a landing and is set to stop at that landing, the corresponding lantern shall be illuminated and the gong shall sound and the lantern shall remain illuminated until the car has left that landing.

H. Hall Position Indicators: Provide illuminated, digital-display-type position indicators, located above each hoistway entrance.

I. Emergency Pictorial Signs: Fabricate from materials matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire, elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station unless otherwise indicated.

2.10 JACK & PIT EQUIPMENT

A. Each cylinder shall be constructed of steel pipe of sufficient thickness and suitable for the operating pressure. The top of each cylinder shall be equipped with a cylinder head with a drip ring to collect any oil seepage as well as an internal guide ring and self-adjusting packing. Each plunger shall be constructed of selected steel tubing or pipe of proper diameter machined true and smooth with a fine polished finish. Each plunger shall be provided with a stop ring electrically welded to it to prevent the plunger from leaving the cylinder. Each plunger and cylinder shall be installed plumb and shall operate freely with minimum friction.

1. A steel packing gland with a guide bearing, wiper ring and packing especially designed for hydraulic elevator service shall be provided.
2. Multiple section jacks, if provided, shall have machined threaded couplings with O-Ring seals to prevent leakage.

B. Buffer Spring Assembly: Attached to the pit floor with removable helical coil springs with internal stop pipes.

C. A hole shall be excavated to accommodate the plunger and cylinder. A 24” in diameter casing shall be installed to keep ground dirt from caving back into hole. A suitable top shall be placed over casing to keep debris from falling into hole until cylinder is installed.

D. Sealed PVC or HDPE cylinder protection system shall be installed. The system shall provide a means to monitor the space between the PVC sleeve and cylinder wall and evacuate unwanted fluids, so as to prevent such fluids from remaining in contact with the cylinder.

E. Pit Stop Switch - An emergency stop switch will be located in the pit.

F. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of steel extending 42” minimum shall be provided at the same height, above sill of access door or handgrips.

2.11 FINISH MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, commercial steel, Type B, exposed, matte finish.

B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, commercial steel, Type B, pickled.

C. Stainless Steel Sheet: ASTM A240/A240M, Type 304.

D. Stainless Steel Bars: ASTM A276/A276M, Type 304.

E. Stainless Steel Tubing: ASTM A554, Grade MT 304.

F. Aluminum Extrusions: ASTM B221, Alloy 6063.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Verify critical dimensions and examine supporting structure and other conditions under which elevator work is to be installed.

B. Take field dimensions and examine conditions of substrates, supports, and other conditions under which this work is to be performed. Do not proceed with work until unsatisfactory conditions are corrected.

C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

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

3.2 INSTALLATION OF MACHINE ROOM-LESS HYDRAULIC PASSENGER ELEVATOR

A. Install elevator systems components and coordinate installation of hoistway wall construction.
   1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1 manufacturer's installation instructions and approved shop drawings.
   2. Comply with the National Electrical Code for electrical work required during installation.

B. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

C. Install cylinder plumb and accurately centered for elevator car position and travel. Anchor securely in place, supported at pit floor and braced at intervals as needed to maintain alignment. Anchor cylinder guides at spacing needed to maintain alignment and avoid overstressing guides.

D. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS workmanship and welding operator qualification standards.

E. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.

F. Install piping above the floor, where possible. Install underground piping in casing. Excavate for piping and backfill encased piping according to applicable requirements in Section 312000 "Earth Moving."

G. Lubricate operating parts of systems as recommended by manufacturers.

H. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay installation of sills and frames until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

I. Leveling Tolerance: 1/4 inch, up or down, regardless of load and travel direction.

J. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.

K. Locate hall signal equipment for elevators as follows unless otherwise indicated:
   1. For groups of elevators, locate hall push-button stations between two elevators at center of group or at location most convenient for approaching passengers.
   2. Place hall lanterns either above or beside each hoistway entrance.
   3. Mount hall lanterns at a minimum of 72 inches above finished floor.

L. The elevator contractor shall make a final check of elevator operation with the Owner or Owner's representative present prior to turning elevator over for use. The elevator contractor shall determine that control systems and operating devices are functioning properly.

3.3 FIELD QUALITY CONTROL

A. Acceptance Testing: On completion of elevator installation and before permitting elevator use (either temporary or permanent), perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies.

B. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times that tests are to be performed on elevators.

3.4 PROTECTION

A. Temporary Use: Limit temporary use for construction purposes to one elevator. Comply with the following requirements for elevator used for construction purposes:

1. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
2. Provide strippable protective film on entrance and car doors and frames.
3. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
4. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
5. Do not load elevators beyond their rated weight capacity.
6. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleanup, and adjustment as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
7. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate elevator(s).

B. Check operation of each elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

3.6 MAINTENANCE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service includes 12 months' full maintenance by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation. Parts and supplies are manufacturer's authorized replacement parts and supplies.

1. Perform maintenance during normal working hours.
2. Perform emergency callback service during normal working hours with response time of two hours or less.
3. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of two hours or less.

END OF SECTION 142400