

A New Music & Dining Venue

For The Von Braun Center

700 Monroe Street

Huntsville, Alabama 35801



Addendum No.1

February 7, 2018

Addendum No. 1 consists of 6 - 8.5x11 pages, 62 specification pages, 0 photographs, 0 - 11x17 drawings, 0 - 8.5x11 drawings and 39 full size drawings.

Addendum No. 1 consists of changes, modifications, and/or revisions to drawings and/or specifications issued on January 8, 2018 by Matheny Goldman Architecture + Interiors, LLC, and is hereby made part of the Contract Documents.

GENERAL NOTES/CLARIFICATIONS:

1. Contractor will need to engage a fully licensed abatement contractor to remove, store, cut/modify, reinstall, or dispose of the existing exterior asbestos wall panels.

MODIFICATIONS/ CLARIFICATIONS TO THE SPECIFICATIONS:

Section 003126 - Existing Hazardous Material Information:

1. See attached existing hazardous material information not included in original spec manual.

Section 083213 - Sliding Aluminum Framed Glass Doors:

1. See attached spec section not included in original spec manual.

Section 087100 - Door Hardware:

1. See attached spec section not included in original spec manual.

Section 093013 - Ceramic Tiling:

1. See attached spec section not included in original spec manual.

Section 099000 - Interior Paints and Coatings:

1. See attached spec section not included in original spec manual.

MODIFICATIONS/ CLARIFICATIONS TO THE DRAWINGS:

Sheet TS:

1. See attached Title Sheet Volume 1 of 2.
2. See attached Title Sheet Volume 2 of 2.

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Sheet C3.0:

1. Relocated sanitary grease trap locations based on MEP plans. Added laterals required for connection.

Sheet C6.0:

1. Added additional booted roof drain locations tied to proposed storm with a connection detail.

Sheet C7.1:

1. Added Seat Wall & Stair Wall Intersection Detail.

Sheet C7.2:

1. Added notes clarifying seat wall footing height, contraction joints, expansion joints, and color of concrete bands.

Sheet A1.0:

1. Changed door ratings at Stair 114 and Stair 136 to 60 minute.
2. Added notes locating ramp and portable accessibility lift at west side of music venue stage.

Sheet A1.1:

1. Changed door rating at Stair 136 to 60 minute.

Sheet A1.2:

1. Changed door rating at Stair 114 to 60 minute.

Sheet A1.3:

1. Updated dimensions, door tags, and room names to reflect floor plan changes at Janitor 116 and Unisex 117.
2. Revised walls adjacent to doors at Entry Hall 100.
3. Added dimensions to walls in Entry Hall 100.

Sheet A1.4:

1. Revised door tags at Vestibule 118.

Sheet A6.0:

1. Revised toilet accessory labels at B/A6.0 Enlarged Plan to reflect new floorplan layout.
2. Redirected leader lines and elevation tags to reflect new floorplan layout.

Sheet A6.8:

1. Toilet accessory label revised at Enlarged Plan B/A6.8.

Sheet A7.0:

1. Revised door schedule.

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Sheet A8.0:

1. Revised notes #9 and #10 of signage notes to incorporate additional signage design basis.
2. Added floor transition note #13 to section "B. Floor/Floor Tile" of Finish Notes.
3. Grout colors selected and added to remarks column of finish legend.

4. Updated note #4 at section "D. Trim/Millwork/Casework of Finish Notes to reflect new casework hardware selection.
5. Added vinyl wallcovering note to section "C. Wall/Wall Tile" of Finish Notes.
6. Added note #5 to section "D. Trim/Millwork/Casework" of Finish Notes.
7. Added note "Color indicated on finish schedule" to WB-1 and WB-2 listings on Finish Schedule.
8. Revised listings PNT-1,2,3,4,5 and 6 on Finish Schedule.
9. Added listing WT-8 to Finish Schedule.
10. Revised color for WC-4 listing on Finish Schedule.
11. Changed listing AD-2 to AD-1 and added pattern/color to Finish Legend.
12. Added listing ES-4 to Finish Legend.
13. Revised listing PL-1 on Finish Legend.
14. Revised paint color listed for AWP-1.

Sheet A8.1:

1. Updated plan to reflect new floorplan layout at Janitor 116 and Unisex 117.
2. Added "Finish Schedule Notes" box.

Sheet A8.2:

1. Added "Finish Schedule Notes" box.

Sheet A8.3:

1. Added "Finish Schedule Notes" box.

Sheet A8.4:

1. Added "Finish Schedule Notes" box.

Sheet A9.0:

1. Ceiling grid and notes at Back Kitchen 115, Janitor 116 and Unisex 117 updated to reflect new floorplan layout.
2. Revised ceiling grid and added recessed wall washer lights for "Tenant A" spaces.
3. Added enlarged plan 2/A9.0 for Women 104, Men 105, and Vestibule 106.
4. Added label for header in Men 105.
5. Revised Ceiling Notes #6 and #7.
6. Revised ceiling series/finish/size listings for EXP-1, EXP-2 and GYP-1 in ceiling legend.
7. Added ACT-3 to ceiling legend.
8. Added note to CLD-3.
9. Added paint color for CLD-3 to the ceiling legend.

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Sheet A9.1:

1. Added label for header in Men 105.
2. Revised Ceiling Notes #6 and #7.
3. Revised ceiling series/finish/size listings for EXP-1, EXP-2 and GYP-1 in ceiling legend.
4. Added ACT-3 to ceiling legend.

5. Changed labels for Back Hall 124 to ACT-3.
6. Omitted lights shown at Stage 123. Lights for ceiling above appear on sheet A9.4.
7. Added paint color for CLD-3 to the ceiling legend.

Sheet A9.2:

1. Added label for header in Men 105.
2. Revised Ceiling Notes #6 and #7.
3. Revised ceiling series/finish/size listings for EXP-1, EXP-2 and GYP-1 in ceiling legend.
4. Added ACT-3 to ceiling legend.
5. Added paint color for CLD-3 to the ceiling legend.

Sheet A9.3:

1. Added label for header in Men 105.
2. Revised Ceiling Notes #6 and #7.
3. Revised ceiling series/finish/size listings for EXP-1, EXP-2 and GYP-1 in ceiling legend.
4. Added ACT-3 to ceiling legend.
5. Added paint color for CLD-3 to the ceiling legend.

Sheet A9.4:

1. Added label for header in Men 105.
2. Revised Ceiling Notes #6 and #7.
3. Revised ceiling series/finish/size listings for EXP-1, EXP-2 and GYP-1 in ceiling legend.
4. Added ACT-3 to ceiling legend.

Sheet E0.2:

1. Revised descriptions for Fixtures 'LGE2', 'LGN2', 'LGN6', 'LP5', 'LP6', 'LPEM', 'LQAL', 'LRA3', 'LRN3', 'LRV2', and 'LSX4'.
2. Added descriptions for Fixtures 'LHB1', 'LP8', 'LP11', 'LUX1', 'LWW2', and 'P1'.

Sheet E2.1:

1. Bar 107
 - a. Revised LGN6 fixtures to be 2' x 2' type.
2. Show Kitchen 112
 - a. Revised LGN6 fixtures to be 2' x 2' type.
3. Janitor 116
 - a. Replaced time switch with wall mounted occupancy sensor.
 - b. Replaced 2x4 troffer with 2x2 troffer.

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4. Unisex 117
 - a. Relocated wall mounted occupancy
 - b. Relocated recessed power panel closer to Double Door 115.
5. Tenant A
 - a. Revised lighting layout per Architect's layout.
 - b. Added recessed wall wash fixtures (LWW2) and additional switching per tenant's request.

Sheet E2.2:

1. Private Dressing 127
 - a. Revised 'LGA3' from 2x4 to 2x2.
2. Private Dressing 128
 - a. Revised 'LGA3' from 2x4 to 2x2.
3. Bar 135
 - a. Revised LGN6 fixtures to be 2' x 2' type.
4. Bar 138
 - a. Revised LGN6 fixtures to be 2' x 2' type.
5. Back Hall 124
 - a. Revised LGN2 fixtures to be 2' x 2' type.

Sheet E2.4:

1. Bar 206
 - a. Revised LGN6 fixture to be 2' x 2' type.
 - b. Revised Plan Note 1 clarifying detail and sheet to be referenced.

Sheet E2.5:

1. Bar 302
 - a. Revised LGN6 fixture to be 2' x 2' type.

Sheet E3.1:

1. Janitor 116
 - a. Relocated receptacle to west wall.
2. Unisex 117
 - a. Relocated receptacle to north wall.
 - b. Relocated recessed power panel closer to Double Door 115.
3. Entry Hall 100
 - a. Relocated receptacles for water fountain to other side of hall.
 - b. Added receptacle and teledata outlet per Architect's request.

Sheet E3.2:

1. Entry Hall 100
 - a. Relocated receptacles for water fountain.
 - b. Added receptacle and teledata outlet per Architect's request.

Sheet MO.1:

1. Fan Schedule
 - a. Revised CFM value for EF-MV-2.

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Sheet M2.1:

1. Janitor 116
 - a. Added 6x6 ceiling exhaust grille.
2. Unisex 117
 - a. Added 6x6 ceiling exhaust grille.
 - b. Extended new 8x6 exhaust duct to tie-in to revised 14x14 exhaust branch duct.
3. Tenant A Suite Space
 - a. Adjusted ceiling diffusers and return grilles to accommodate new reflected ceiling plan.

Sheet M2.5:

1. Storage 305
 - a. Revised exhaust duct down to First Floor to 14x14.
 - b. Added 6x6 exhaust grille.

Sheet PO.4:

1. Revised Unisex restroom 117 and janitors closet 116.
2. Added sanitary and vent to office sink.

Sheet P1.0:

1. Revised Unisex restroom 117 and janitors closet 116.
2. Added sanitary and vent to office sink.

Sheet P1.1:

1. Revised EWC-1 location

Sheet P2.0

2. Revised Unisex restroom 117 and janitors closet 116.
3. Added sanitary and vent to office sink.

Sheet P2.1:

1. Revised EWC-1 location.
2. Revised Gas meter information and added new line to pick up ex. equipment
3. Added roof plan to sheet.

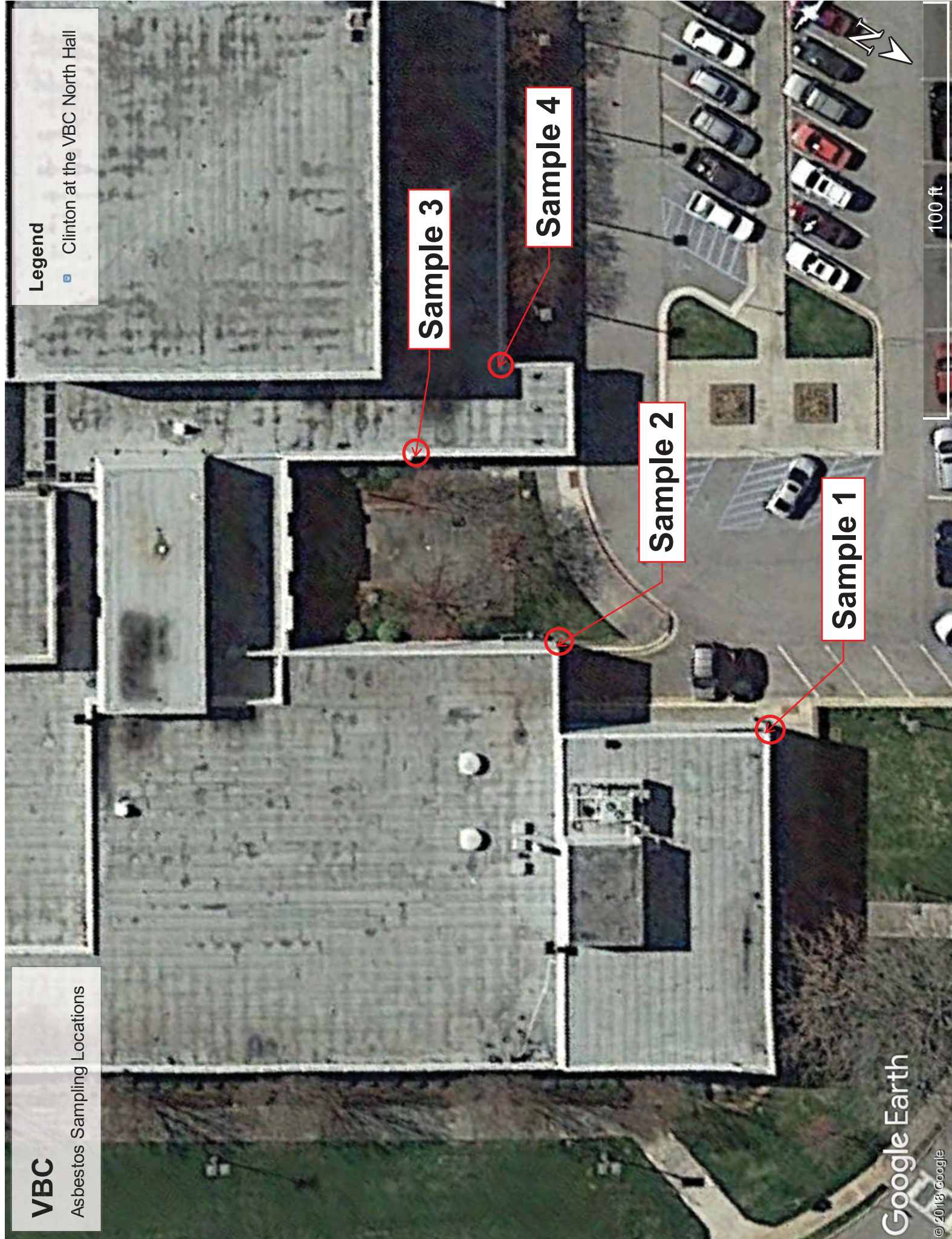
END OF ADDENDUM NO. 1

VBC

Asbestos Sampling Locations

Legend

- Clinton at the VBC North Hall



Sample 3

Sample 4

Sample 2

Sample 1



EMSL Analytical, Inc.

2205 Corporate Plaza Parkway SE, Suite 200 Smyrna, GA 30080

Tel/Fax: (770) 956-9150 / (770) 956-9181

<http://www.EMSL.com> / atlantalab@emsl.com

EMSL Order: 071800469

Customer ID: OMII30

Customer PO:

Project ID:

Attention: Wes McKay
OMI, Inc.
5151 Research Drive Northwest
Suite A
Huntsville, AL 35805

Phone: (256) 837-7664

Fax: (256) 837-7677

Received Date: 01/22/2018 12:15 PM

Analysis Date: 01/22/2018

Collected Date:

Project: 8183

Test Report: Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
VBC 1 <i>071800469-0001</i>	North Hall, Newer Construction, Exterior Panel, Off White And White Compound <i>Inseparable paint / coating layer included in analysis</i>	Gray Fibrous Homogeneous		75% Non-fibrous (Other)	25% Chrysotile
VBC 2 <i>071800469-0002</i>	North Hall, Newer Construction, Exterior Panel, Off White And White Compound				Positive Stop (Not Analyzed)
VBC 3 <i>071800469-0003</i>	North Hall, Older, Exterior Panel, Dark Grey And White Compound And Grey Compound <i>Inseparable paint / coating layer included in analysis</i>	Various Fibrous Homogeneous		75% Non-fibrous (Other)	25% Chrysotile
VBC 4 <i>071800469-0004</i>	North Hall, Older, Exterior Panel, Dark Grey And White Compound And Grey Compound				Positive Stop (Not Analyzed)

Analyst(s)

Anthony Sanaie (2)

Amber Baynes, Asbestos Lab Supervisor
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Samples received in good condition unless otherwise noted. Estimated accuracy, precision and uncertainty data available upon request. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Reporting limit is 1%

Samples analyzed by EMSL Analytical, Inc Smyrna, GA NVLAP Lab Code 101048-1

Initial report from: 01/22/2018 13:41:38

SECTION 083213 - SLIDING ALUMINUM-FRAMED GLASS DOORS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes furnishing and installing a single track, sliding thermally broken aluminum framed glass door, wall or storefront panel system that includes:
1. Aluminum frame
 2. Tracks
 3. Threshold
 4. Sliding panels
 5. Stacking bays
 6. Weatherstripping
 7. Glass and glazing
 8. Accessories as required for a complete working installation.
- B. Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. A list of those Documents and Sections include, but is not limited to, the following:
1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, Specification Sections, apply to this Section.
 2. Section 061000, Rough Carpentry: Wood framing R.O. and blocking.
 3. Section 072700, Air Barriers: Building wrap
 4. Section 076200, Sheet Metal Flashing and Trim: Flashing and other sheet metal work.
 5. Section 079000, Joint Protection
 6. Section 084223, Glass Entrance Swing Doors

1.02 REFERENCES

- A. Reference Standards in accordance with Division 01 and current editions from the following:
1. AAMA. American Architectural Manufacturers Association; www.aamanet.org
 - a. AAMA 503, Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls, and Sloped Glazing Systems
 - b. AAMA 611, Voluntary Specification for Anodized Architectural Aluminum
 - c. AAMA 920, Operation / Cycling Performance
 - d. AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
 - e. AAMA/WDMA/CSA 101/I.S.2/A440, NAFS, North American Fenestration Standard - Specification for Windows, Doors and Skylights
 2. ANSI. American National Standards Institute; www.ansi.org
 - a. ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing

Material Used In Buildings

3. ASTM. ASTM International; www.astm.org
 - a. ASTM C1036, Standard Specification for Flat Glass
 - b. ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
 - c. ASTM E283, Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 - d. ASTM E330, Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 - e. ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
 - f. ASTM E413, Classification for Rating Sound Insulation
 - g. ASTM E547, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Cyclic Static Air Pressure Differential.
 - h. ASTM E1332, Standard Classification for Rating Outdoor-Indoor Sound Attenuation
 - i. ASTM F842, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact
 - j. ASTM E2068, Standard Test Method to Determine the Opening and Breakaway Forces of Sliding Windows and Doors
4. CPSC. Consumer Product Safety Commission; www.cpsc.gov
 - a. CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.
5. Energy Star, U.S. Environmental Protection Agency (EPA) Program; www.energystar.gov
6. NFRC. National Fenestration Rating Council; www.nfrc.org
 - a. NFRC 100, Procedure for Determining Fenestration Product U-factors
 - b. NFRC 200, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence
 - c. NFRC 400, Procedure for Determining Fenestration Product Air Leakage
 - d. NFRC 500, Procedure for Determining Fenestration Product Condensation Resistance Rating Values

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate Sliding Glass Storefront system and framing R.O.
- B. Preinstallation Meetings: See Section 013000.

1.04 SUBMITTALS

- A. For Contractor submittal procedures see Section 013000.
- B. Product Data: Submit manufacturer's printed product literature for each Sliding Glass Storefront system to be incorporated into the Work. Show performance test results and details of

construction relative to materials, dimensions of individual components, profiles and colors.

- C. Shop Drawings: Indicate Sliding Glass Storefront system component sizes, dimensions and framing R.O., configuration, sliding and swing panels, direction of swing, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, handle height and field measurements.
- D. Manufacturers' Instructions: Submit manufacturer's installation instructions.
- E. Operation and Maintenance Data: Submit Owner's Manual from manufacturer. Identify with project name, location and completion date, and type and size of unit installed.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum twenty-five (25) years' experience in the sale of folding-sliding door systems for large openings in the North American market.
 - 1. Manufacturer to have ISO 9001: 2008 quality management system registration.
 - 2. Manufacturer to have ISO 14001: 2005 environmental management system registration.
- B. Installer Qualifications: Installer experienced in the installation of manufacturer's products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.
 - 1. Installer to be trained and certified by manufacturer.
- C. Single Source Responsibility: Furnish Sliding Glass Storefront system materials from one manufacturer for entire Project.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's instructions and recommendations, Section 016000 requirements, and as follows:
 - 1. Deliver materials to job site in sealed, unopened cartons or crates.
 - a. Upon receipt, inspect the shipment to ensure it is complete, in good condition and meets project requirements.
 - 2. Store material under cover in a clean and dry location, protecting units against weather and defacement or damage from construction activities, especially to the edges of panels.

1.07 FIELD CONDITIONS

- A. Field Measurements: Contractor to field verify dimensions of rough openings (R.O.), stack storage area and threshold depressions to receive sill. Mark field measurements on shop drawing submittal.

1.08 WARRANTY

- A. Manufacturer Warranty: Provide Sliding Glass Storefront system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase,

subject to change, against defects in materials and workmanship.

1. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of Substantial Completion:
 - a. Rollers and Glass Seal Failure: Ten (10) years
 - b. All Other Components Except Screens: Ten (10) years
 - 1). Exception: Five (5) years if NOT installed by manufacturer's certified trained installer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design Product by Manufacturer: NanaWall HSW60 by NANA WALL SYSTEMS, as indicated in the drawings or comparable product by one of the following:

1. Dorma - Moveo Sliding system
2. Doors in Motion - Tempe, AZ

2.02 PERFORMANCE / DESIGN CRITERIA

- A. Performance Criteria (Lab Tested): Low Profile Saddle Sill

1. Air Infiltration (ASTM E283):
 - a. 0.3 cfm/ft² (1.5 L/s/m²) at a static air pressure difference of 1.57 psf (75 Pa)
2. Water Penetration (ASTM E331, ASTM E547):
 - a. No uncontrolled water leakage at a static test pressure in:
 - 1). Units with Weepholes from Middle Channel: 2.92 psf (140 Pa)
 - 2). Units with Weepholes from Inner Channel: 6.0 psf (290 Pa)
3. Structural Loading (ASTM E330): Pass
 - a. Load Structure: At 1.5 times design wind pressure with no glass breakage or permanent damage to fasteners or storefront components.
 - 1). Design Pressure Positive: 45 psf (2160 Pa)
 - 2). Design Pressure Negative: 45 psf (2160 Pa)
4. Forced Entry (ASTM F842): Meets Type A - Grade 40
5. Sliding Glass Storefront Units tested to AAMA/WDMA/CSA 101/I.S.2/A440.
6. Project Wind Loads (ASCE 7): System designed to withstand 20.0 psf (958 Pa) core required positive and negative pressure as minimum loads normal to the plane of the wall as required by authorities having jurisdiction.
7. Thermal Performance (U-factor): NFRC 100 rated
8. Solar Heat Gain Coefficient (SHGC) + Visible Light Transmission (VT): NFRC 200 rated
9. Air Leakage: NFRC 400 rated
10. Condensation Resistance Factor (CRF): NFRC 500 rated

- B. Design Criteria:

1. Sizes and Configurations: As indicated by the drawings for selected number and size of

- panels, location of swing panels, and location of tracks and stacking bays.
- 2. Unit Operation: Adjustable sliding and swing hardware with top and bottom tracks;
- 3. Panel Configuration:
 - a. Straight
- 4. Stack Storage Configuration:
 - a. Jamb wall pocket
- 5. Mounting Type: Top hung
- 6. Panel Type: Multiple unattached

2.03 MATERIALS

- A. Sliding Glass Storefront Description: Standard top-hung, single-track, interlocking aluminum-framed sliding glass storefront system that can be pocketed when open and have a swing door hinged off a side jamb or within a sliding panel. Manufacturer's standard frame and panel profiles, with head track, stacking bays, side jambs, sliding panels, and swing panels with dimensions as shown on Drawings.
1. Provide clear anodized aluminum head track with aluminum covers on both sides that match aluminum profile finish.
 2. Panels:
 - a. Single lite.
 3. Panel Size (W x H): As indicated.
 4. Head Rail Width x Depth: 4-5/16 x 2-5/16 inch (110 x 59 mm)
 5. Jamb Rail Width x Depth: 5-1/4 x 2-5/16 inch (134 x 59 mm)
 6. Bottom Rail Width:
 - a. 2-3/8 inch (60 mm)
 7. Aluminum Extrusion: AlMgSi0.5 alloy, 6063-T5 (F-22 - European standard)
 - a. Thickness: 0.078 inch (2.0 mm) nominal
 8. Aluminum Finish (including head track covers):
 - a. Anodized (AAMA 611): Clear
- B. Glass and Glazing:
1. Safety Glazing: In compliance with ANSI Z97.1 and CPSC 16CFR 1201.
 - a. Glass Lite / Insulated Glass Unit (IGU):
 - 1). Double IGU:
 - a). 15/16 inch (24 mm) thick.
 - b). IGU Fill: Argon
 - c). Glass Spacers: Manufacturer's standard Silver Gray finish
 - b. Glass Lite Type:
 - 1). Standard
- C. Locking Hardware and Handles:
1. Secondary Panels: Provide manufacturer's standard flat handles and concealed one or two point locking hardware operated by 180° turn of handle. Face applied flush bolt locking not acceptable.
 - a. Flat Handle - Finish:
 - 1). Brushed satin stainless steel
 2. Handle Height: 41-3/8 inch (105 cm) centered from bottom of panel or as otherwise indicated.
 3. Aluminum locking rods with standard fiberglass reinforced polyamide end caps at the bottom

(and top on certain panels). Rods to have a stroke of 15/16 inch (24 mm).

- D. Sliding-Swinging Hardware: Provide manufacturer's standard hardware.
1. For each sliding panel, provide two (2) two-three wheeled, sintered bronze (oil impregnated) unidirectional sliding panel carriers with a one wheeled, polyamide guide rollers that are attached to the panels with stainless steel rods.
 - a. Maximum carrying capacity of two carriers on a panel to be 330 lbs (150 kgs).
 - b. Provide on all four corners of sliding panels and incorporated swing panels, thermally broken, die cast zinc multifunctional corner fittings with carrier connectors, male and female locking receptacles, hinges and hinge pins as required.
 - c. Finish: Powder coated, closest match to finish of frame and panels.
 - d. Adjustment: Provide system capable of specified amount of adjustments without removing panels from tracks.
 2. Sill Type: Low Profile Saddle Sill – Thermally Broken
 - a. Finish: Aluminum with a clear anodized finish.
- E. Weatherstripping: Manufacturer's double layer EPDM between panels and EPDM gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame.
- F. Fasteners: Stainless steel machine screws for connecting frame components.

2.04 FABRICATION

- A. Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding hardware, locking hardware and handles, glass and glazing and weatherstripping components to construct sliding glass wall with stacking bays.
1. Each unit factory pre-assembled and shipped with all components and installation instructions.
 2. Exposed work to be carefully matched to produce continuity of line and design with all joints.
 3. No raw edges visible at joints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examination and Acceptance of Conditions per Section 017000 and as follows:
1. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.
 - a. Verify that field measurements, substrates, tolerances, levelness, plumbness, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.
 - b. Verify the structural integrity of the header for deflection with live and dead loads limited to the lesser of L/720 of the span or 1/4 inch (6 mm). Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open.
 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Install Sliding Glass Storefront system in accordance with the Drawings, approved

submittals, manufacturers' recommendations and installation instructions, and as follows:

1. Properly flash, waterproof and seal around opening perimeter.
2. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb and square. Install frame in proper elevation, plane and location, and in proper alignment with other work
3. When lower track is designed to drain, provide connections to allow for drainage.
4. Install panels, handles, lock set, screens, weatherstripping and other accessories in accordance with manufacturer's recommendations and instructions.
5. Installer must have a minimum 5 years' experience with similar systems and provide written certification by manufacturer.

3.03 FIELD QUALITY CONTROL

- A. Field Tests and Inspections per Section 014000 of the following:
 1. Verify the Sliding Glass Storefront system operates and functions properly. Adjust hardware for proper operation.
- B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect; see General and Supplementary Conditions, and Division 01, General Requirements.

3.04 CLEANING AND PROTECTION

- A. Keep units closed and protect Sliding Glass Storefront installation against damage from construction activities.
- B. Remove protective coatings and use manufacturer recommended methods to clean exposed surfaces.

END OF SECTION

SECTION 087100 – DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Automatic operators.
 - 4. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 06 Section "Rough Carpentry".
 - 2. Division 06 Section "Finish Carpentry".
 - 3. Division 08 Section "Operations and Maintenance".
 - 4. Division 08 Section "Door Schedule".
 - 5. Division 08 Section "Door Hardware Schedule".
 - 6. Division 08 Section "Hollow Metal Doors and Frames".
 - 7. Division 08 Section "Flush Wood Doors".
 - 8. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
 - 9. Division 08 Section "Automatic Door Operators".
 - 10. Division 08 Section "Access Control Hardware".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. UL/ULC and CSA C22.2 – Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
 - 8. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards:

1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.

- b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
 2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
 1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.
- D. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- E. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

- F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
1. Function of building, purpose of each area and degree of security required.
 2. Plans for existing and future key system expansion.
 3. Requirements for key control storage and software.
 4. Installation of permanent keys, cylinder cores and software.
 5. Address and requirements for delivery of keys.
- G. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 3. Review sequence of operation narratives for each unique access controlled opening.
 4. Review and finalize construction schedule and verify availability of materials.
 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- H. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to

source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

- C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual surface door closer bodies.
 - 4. Five years for motorized electric latch retraction exit devices.
 - 5. Two years for electromechanical door hardware.

1.8 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

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

- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

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

- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Acceptable Manufacturers:
 - a. Hager Companies (HA).
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
 - c. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
- C. Pivots: ANSI/BHMA A156.4, Grade 1, certified. Space intermediate pivots equally not less than 25 inches on center apart or not more than 35 inches on center for doors over 121 inches high. Pivot hinges to have oil impregnated bronze bearing in the top pivot and a radial roller and thrust bearing in the bottom pivot with the bottom pivot designed to carry the full weight of the door. Pivots to be UL listed for windstorm where applicable.
1. Acceptable Manufacturers:
 - a. Architectural Builders Hardware (AH).
 - b. Dorma Products (DO).
 - c. Rixson Door Controls (RF).

2.3 POWER TRANSFER DEVICES

- A. Electrified Quick Connect Intermediate Transfer Pivots: Provide electrified offset intermediate transfer pivot hinges with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.
1. Acceptable Manufacturers:
 - a. Rixson Door Controls (RF) - E-M19-QC (# wires).
- B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.
1. Provide one each of the following tools as part of the base bid contract:
 - a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Electrical Connecting Kit: QC-R001.
 - b. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) - Connector Hand Tool: QC-R003.
 2. Acceptable Manufacturers:

- a. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK) – QC-C Series.

2.4 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
 1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
 2. Furnish dust proof strikes for bottom bolts.
 3. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
 4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 5. Acceptable Manufacturers:
 - a. Door Controls International (DC).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
 1. Acceptable Manufacturers:
 - a. Door Controls International (DC).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
- C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
 4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 5. Acceptable Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.5 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
 - 1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA).
- C. Cylinders: Original manufacturer cylinders complying with the following:
 - 1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
 - 2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 - 3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
 - 4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 - 5. Keyway: Match Facility Restricted Keyway.
- D. High Security Cylinders: ANSI/BHMA A156.5, Grade 1, patterned high security cylinders and keys able to be used together under the same facility master or grandmaster key system. Provide UL437 certified high security cylinders, employing a patterned locking mechanism requiring the use of a patterned key and pick resistance; cylinders are to be factory keyed.
 - 1. Acceptable Manufacturers:
 - a. Sargent Manufacturing (SA) - KESO Series.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
 - 1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
 - 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 - 3. Existing System: Key locks to Owner's existing system.
- F. Key Quantity: Provide the following minimum number of keys:
 - 1. Change Keys per Cylinder: Two (2)
 - 2. Master Keys (per Master Key Level/Group): Five (5).
 - 3. Construction Keys (where required): Ten (10).
- G. Construction Keying: Provide construction master keyed cylinders.
- H. Key Registration List (Bitting List):
 - 1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
 - 2. Provide transcript list in writing or electronic file as directed by the Owner.

- I. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Acceptable Manufacturers:

- a. Lund Equipment (LU).
- b. MMF Industries (MM).
- c. Telkee (TK).

2.6 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) – ML2000 Series.
- b. Sargent Manufacturing (SA) – 8200 Series.
- c. Schlage (SC) – L9000 Series.

2.7 AUXILIARY LOCKS

- A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.

1. Acceptable Manufacturers:

- a. Corbin Russwin Hardware (RU) - DL4100 Series.
- b. Sargent Manufacturing (SA) - 4870 Series.
- c. Schlage (SC) - L460 Series.

2.8 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

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

- B. Standards: Comply with the following:

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

2.9 CONVENTIONAL EXIT DEVICES

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

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.
3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
5. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
 - b. Sargent Manufacturing (SA) - 80 Series.
 - c. Stanley Precision (PR) - Apex 2000 Series.
- C. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish.
1. Provide keyed removable feature where specified in the Hardware Sets.
 2. Provide stabilizers and mounting brackets as required.
 3. Provide electrical quick connection wiring options as specified in the hardware sets.
 4. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - 700/900 Series.
 - b. Sargent Manufacturing (SA) - 980S Series.
 - c. Stanley Precision (PR) - 822 Series.

2.10 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.
 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
 3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.
 4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.
 5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 6. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.

7. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
1. Acceptable Manufacturers:
 - a. Corbin Russwin Hardware (RU) - DC8000 Series.
 - b. Norton Door Controls (NO) – 9500 Series.
 - c. Sargent Manufacturing (SA) - 281 Series.
- C. Door Closers, Overhead Concealed (Narrow Profile): ANSI/BHMA 156.4 certified Grade 1 door closers designed for narrow profile frames and doors. Closers to have fully concealed body in the frame head for offset hung applications, with separate and independent valves for closing speed and backcheck adjustments.
1. Acceptable Manufacturers:
 - a. Dorma Products (DO) - RTS88 Series.
 - b. Rixson Door Controls (RF) - 91 Series.

2.11 ELECTROHYDRAULIC DOOR OPERATORS

- A. General: Provide low energy operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.
1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
- B. Standard: Certified ANSI/BHMA A156.19.
- C. Performance Requirements:
1. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
 2. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.
- D. Configuration: Surface mounted or in-ground as required. Door operators to control single swinging and pair of swinging doors.
- E. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19. When not in automatic mode, door operator to function as

manual door closer with fully adjustable opening and closing forces, with or without electrical power.

- F. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.
- G. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
- H. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.
- I. Acceptable Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Dorma Products (DO) - ED800 Series.
 - 2. LCN Closers (LC) - 4640 Series.
 - 3. Norton Door Controls (NO) - 6000 Series.

2.12 ARCHITECTURAL TRIM

A. Door Protective Trim

- 1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
- 2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
- 3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
- 4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
- 5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
- 6. Acceptable Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).

2.13 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 - 1. Acceptable Manufacturers:
 - a. Hiawatha, Inc. (HI).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Trimco (TC).
- C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.
 - 1. Acceptable Manufacturers:
 - a. Rixson Door Controls (RF).
 - b. Rockwood Products; ASSA ABLOY Architectural Door Accessories (RO).
 - c. Sargent Manufacturing (SA).

2.14 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NPFA 252, Standard Methods of Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Acceptable Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko Products; ASSA ABLOY Architectural Door Accessories (PE).
 - 3. Reese Enterprises, Inc. (RE).

2.15 ELECTRONIC ACCESSORIES

- A. Key Switches: Key switches furnished standard with stainless steel single gang face plate with a 12/24VDC bi-color LED indicator. Integral backing bracket permits integration with any 1 1/4" or 1 1/2" mortise type cylinder. Key switches available as momentary or maintained action and in narrow face plate options.
 - 1. Acceptable Manufacturers:
 - a. Security Door Controls (SD) - 800 Series.
 - b. Securitron (SU) - MK Series.
- B. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.
 - 1. Acceptable Manufacturers:
 - a. Security Door Controls (SD) - DPS Series.
 - b. Securitron (SU) - DPS Series.
- C. Power Supplies: Provide Nationally Recognized Testing Laboratory Listed 12VDC or 24VDC (field selectable) filtered and regulated power supplies. Include battery backup option with integral battery charging capability in addition to operating the DC load in event of line voltage failure. Provide the least number of units, at the appropriate amperage level, sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.
 - 1. Acceptable Manufacturers:
 - a. Security Door Controls (SD) - 630 Series.
 - b. Securitron (SU) - BPS Series.

2.16 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.17 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."

4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 ADJUSTING

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

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
- B. Manufacturer's Abbreviations:

MK - McKinney
 PE - Pemko
 RF - Rixson
 RO - Rockwood
 SA - Sargent
 AD - Adams Rite
 NO - Norton
 SU - Securitron

Hardware Sets

Set: 1.0

Doors: 100B, 122C

Description: EXT PR - ALUM

2 Pivot Set	195	626	RF
4 Intermediate Pivot	M19	626	RF
1 Concealed Vert Rod Exit	16 84 AD8410 106	US32D	SA
1 Concealed Vert Rod Exit	16 AD8410	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Pull	RM7940-36	US32D	RO
2 Concealed Closer	91N 90N	626	RF
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		

Set: 2.0

Doors: 100A, 109A, 122D

Description: EXT PR - ALUM - A/O

2 Pivot Set	195	626	RF
3 Intermediate Pivot	M19	626	RF
1 Electrified Inter Pivot	EM19 QC-XX	626	RF ↗
1 Concealed Vert Rod Exit	16 AD8410	US32D	SA
1 Concealed Vert Rod Exit	55 56 84 AD8410 106	US32D	SA ↗
1 Cylinder	F1 as required	US26D	SA
2 Door Pull	RM7940-36	US32D	RO
1 Concealed Closer	91N 90N	626	RF
1 Door Operator	6000 series	689	NO ↗
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		
1 ElectroLynx Harness	QC-C1500 [PS to hinge]		MK ↗

1 ElectroLynx Harness	QC-CXXP [Lock / exit to hinge]	MK	↗
1 Wiring Diagram	WD-SYSPK	SA	
2 Wall actuator	506	NO	↗

Notes: Wall actuator retracts the latchbolt and activates the auto operator
Entry by key override at all times
Door can be operated manually without auto operator
Auto operator to be switched off during non business hours

Set: 3.0

Doors: 306

Description: ROOF LOBBY PR - ALUM

2 Pivot Set	195	626	RF
2 Intermediate Pivot	M19	626	RF
1 Concealed Vert Rod Exit	16 AD8410	US32D	SA
1 Concealed Vert Rod Exit	16 AD8410 106	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Pull	RM7940-36	US32D	RO
2 Concealed Closer	91N 90N	626	RF
2 Wall Stop	409 / 446 [as required]	US32D	RO
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		

Set: 4.0

Doors: 109B, 109C

Description: EXT DINE - ALUM

1 Pivot Set	195	626	RF
1 Intermediate Pivot	M19	626	RF
1 Rim Exit Device	16 84 AD8504 Less Pull	US32D	SA
1 Door Pull	RM7940-36	US32D	RO
1 Concealed Closer	91N 90N	626	RF
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		

Set: 5.0

Doors: 124A

Description: CORR PR - RATED

8 Hinge (heavy weight)	TA386 4-1/2" x 4-1/2"	US32D	MK
1 Removable Mullion	12-L980	PC	SA
1 Rim Exit Device	12 84 8804 ETMD	US32D	SA
1 Rim Exit Device	12 8810	US32D	SA
2 Cylinder	F1 as required	US26D	SA
1 Cylinder	980C1	US26D	SA
2 Door Closer	281 CPS	EN	SA
2 Armor Plate	K1050 36" X 2" LDW 4BE CSK	US32D	RO
1 Gasketing	S773D		PE
1 Astragal	S772D [mtg on mull]		PE

Set: 6.0

Doors: 200, 305A,

Description: ROOF MECH - PR

6 Hinge	TA314 NRP 4-1/2" x 4-1/2"	US32D	MK
2 Surface Bolt	580-8	US32D	RO
1 Dormitory Lock	84 8225 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Closer	281 PS	EN	SA
1 Threshold	1715AK MSES25SS		PE
1 Gasketing	S773D		PE
1 Rain Guard	346C x LAR		PE
2 Sweep	315CN		PE
1 Astragal	357SP X S88D		PE

Set: 7.0

Doors: 124B, 134A

Description: EXT PR - SERV CORR – BACK STAGE

8 Hinge (heavy weight)	TA386 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Removable Mullion	980S	PC	SA
1 Rim Exit Device	16 8810	US32D	SA
1 Rim Exit Device	16 84 8804 ETMD	US32D	SA
4 Cylinder	F1 as required	US26D	SA
1 Cylinder	980C1	US26D	SA
2 Door Closer	281 CPS	EN	SA
2 Armor Plate	K1050 36" X 2" LDW 4BE CSK	US32D	RO
1 Threshold	271A MSES25SS		PE
1 Gasketing	S773D		PE
1 Rain Guard	346C x LAR		PE
2 Sweep	315CN		PE
1 Astragal	S772D [mtg on mull]		PE
2 Peeps	622	626	RO

Set: 8.0

Doors: B-100

Description: EXT- POLICE PR - ALUM

2 Continuous Hinge	KCFMXX-HD1		PE
1 Deadlatch	4900 X 4591	628	AD
1 3 Point Deadlock	MS1850 x 4066 x 4015 x 4016	626	AD
2 Cylinder	F1 as required	US26D	SA
2 Door Pull	RM7940-36	US32D	RO
2 Door Closer	281 PS	EN	SA
1 Threshold	271A MSES25SS		PE
1 Gasketing	by door / frame mfg		

Set: 9.0

Doors: 136A

Description: EXT - STAIR [EO]

4 Hinge	TA314 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Rim Exit Device	16 8810	US32D	SA
1 Door Closer	281 CPS	EN	SA
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Threshold	271A MSES25SS		PE
1 Gasketing	S773D		PE

1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE

Set: 10.0

Doors: 103

Description: ROOF STAIR

3 Hinge	TA314 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Rim Exit Device	16 84 8813 ETMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Door Closer	281 Reg / PA	EN	SA
1 Threshold	271A MSES25SS		PE
1 Gasketing	S773D		PE
1 Sweep	315CN		PE

Set: 11.0

Doors: 130

Description: EXT - SPRINKLER

3 Hinge	TA314 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lock	84 8204 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Door Closer	281 PS	EN	SA
1 Threshold	271A MSES25SS		PE
1 Gasketing	S773D		PE
1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE

Set: 12.0

Doors: 302A

Description: EXT - BAR

3 Hinge	TA314 NRP 4-1/2" x 4-1/2"	US32D	MK
1 Entry Lock	84 8205 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Door Closer	281 PS	EN	SA
1 Threshold	271A MSES25SS		PE
1 Gasketing	S773D		PE
1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE

Set: 13.0

Doors: 300, 301

Description: ROOF RESTROOM

1 Continuous Hinge	KCFMXX-HD1		PE
1 Mortise Deadlock	84 4877	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Push/Pull Plate	RM1020	US32D	RO
1 Door Pull	RM7940-12	US32D	RO
1 Door Closer	281 Reg / PA	EN	SA
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Threshold	271A MSES25SS		PE

1 Gasketing	S773D		PE
1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE

Set: 14.0

Doors: 100C, 100D

Description: CORR PR - RATED - EMHO

8 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Surface Vert Rod Exit	12 84 NB8713 ETMD	US32D	SA
1 Surface Vert Rod Exit	12 NB8710	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Closer	281 Reg / PA	EN	SA
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Electromagnetic Holder	998	689	RF <
1 Electromagnetic Holder (Floor Mtd - BTB)		981M	689 RF
<			
1 Gasketing	S773D		PE
1 Astragal	S772D		PE

Notes: Wall magnets tied into building fire alarm system to release in case of event

Set: 15.0

Doors: 131

Description: STOR PR - RATED

6 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Dust Proof Strike	570	US26D	RO
1 Flush Bolt (Self-latching)	2845 / 2945 (as required)	US26D	RO
1 Storeroom Lock	84 8204 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Coordinator (W/mtg plates)	2672 x Mtg Brkts	Black	RO
2 Door Closer	281 Reg / PA	EN	SA
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
2 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE
1 Astragal	S772D		PE

Set: 16.0

Doors: 110B

Description: BACK KITCHEN - RATED – HOLD OPEN

6 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Dust Proof Strike	570	US26D	RO
1 Flush Bolt (Self-latching)	2845 / 2945 (as required)	US26D	RO
1 Storeroom Lock	84 8204 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Coordinator (W/mtg plates)	2672 x Mtg Brkts	Black	RO
2 Door Closer	351 EHT/EHTD Series	EN	SA
2 Armor Plate	K1050 36" X 2" LDW 4BE CSK	US32D	RO
2 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE
1 Astragal	S772D		PE

Set: 17.0

Doors: 115

Description: KITCHEN PR - RATED

8 Hinge (heavy weight)	TA386 4-1/2" x 4-1/2"	US32D	MK
1 Dust Proof Strike	570	US26D	RO
1 Flush Bolt (Self-latching)	2845 / 2945 (as required)	US26D	RO
1 Classroom Lock	84 8237 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Coordinator (W/mtg plates)	2672 x Mtg Brkts	Black	RO
2 Door Closer	281 PS	EN	SA
2 Armor Plate	K1050 36" X 2" LDW 4BE CSK	US32D	RO
1 Gasketing	S773D		PE
1 Astragal	357SP X S88D		PE

Set: 18.0

Doors: 114B, 114C, 136B, 136C

Description: STAIR - RATED

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Rim Exit Device	12 8815 ETMD	US32D	SA
1 Door Closer	281 Reg / PA	EN	SA
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE

Set: 19.0

Doors: 114A

Description: STAIR - RATED

4 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Rim Exit Device	12 8815 ETMD	US32D	SA
1 Door Closer	281 PS	EN	SA
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Gasketing	S773D		PE

Set: 20.0

Doors: 143

Description: OFFICE - RATED

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Office Lock	84 8205 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Door Closer	281 Reg / PA	EN	SA
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE
1 Peep Hole	622	626	RO

Set: 21.0

Doors: A-100

Description: ENTRY - RATED

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
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1 Office Lock	84 8205 TRMD	US32D	SA
1 Door Closer	281 PS	EN	SA
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE

Set: 22.0

Doors: 125, 305B

Description: GREEN RM - RATED

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Classroom Lock	84 8237 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Door Closer	281 Reg / PA	EN	SA
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE

Set: 23.0

Doors: 110A

Description: BACK BAR – RATED – HOLD OPEN

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Classroom Lock	84 8237 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Surface Closer	351 EHT/EHTD Series	EN	SA ↗
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Armor Plate	K1050 36" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE

Notes: Closer / holder tied into building fire alarm system to release in case of event

Set: 24.0

Doors: 129B

Description: THEATER PR

6 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Surface Vert Rod Exit	16 84 NB8713 ETMD	US32D	SA
1 Surface Vert Rod Exit	16 84 NB8710 ETMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Pull	RM7940-36	US32D	RO
2 Door Closer	281 PS	EN	SA
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Gasketing	S773D		PE
2 Door Bottom	PDB411AE 36"		PE
1 Astragal	S772D		PE

Set: 25.0

Doors: 122A, 122B

Description: THEATER PR - RATED

8 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Surface Vert Rod Exit	12 84 NB8713 ETMD	US32D	SA

1 Surface Vert Rod Exit	12 NB8710	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Closer	281 PS	EN	SA
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Electromagnetic Holder	998	689	RF ↗
1 Electromagnetic Holder (Floor Mtd - BTB)		981M	689 RF
↗			
1 Gasketing	S773D		PE
1 Astragal	S772D		PE

Notes: Wall magnets tied into building fire alarm system to release in case of event

Set: 26.0

Doors: 134B

Description: BACK BAR PR

6 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
2 Flush Bolt	555 [12" / 72" AFF]	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Classroom Lock	84 8237 TRMD	US32D	SA
2 Door Closer	281 Reg / PA	EN	SA
2 Armor Plate	K1050 36" X 2" LDW 4BE CSK	US32D	RO
2 Wall Stop	409 / 446 [as required]	US32D	RO
2 Door Stop & Holder	491S	US26D	RO
2 Silencer	608		RO

Set: 27.0

Doors: 122G

Description: BACKSTAGE PR

6 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
2 Flush Pull	503SF		PE
2 Flush Bolt	555 [12" / 72" AFF]	US26D	RO
1 Dust Proof Strike	570	US26D	RO
1 Mortise Deadlock	84 4875	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Door Closer	281 PS	EN	SA
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
2 Silencer	608		RO
2 Peep Holes	622	626	RO

Set: 28.0

Doors: 109G

Description: DINE PR - AL

2 Pivot Set	195	626	RF
4 Intermediate Pivot	M19	626	RF
1 Mortise Deadlock	MS1850S X 4066	628	AD
1 Cylinder	F1 as required	US26D	SA
4 Door Pull	RM7940-36	US32D	RO
2 Concealed Closer	91N 90N	626	RF
2 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	by door / frame mfg		

Set: 29.0

Doors: 123A, 123B

Description: STAGE STOR PR

4 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
2 Flush Pull	503SF		PE
2 Surface Bolt	580-8	US32D	RO
1 Mortise Deadlock	84 4875	US32D	SA
1 Cylinder	F1 as required	US26D	SA
2 Silencer	608		RO

Set: 30.0

Doors: 122E

Description: SERV CORR PR

6 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
2 Push/Pull Plate	RM1020	US32D	RO
2 Door Pull	RM7940-12	US32D	RO
2 Door Closer	281 Reg / PA	EN	SA
2 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
2 Door Stop & Holder	491S	US26D	RO

Set: 31.0

Doors: 144A, 206A

Description: BAR

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Classroom Lock	84 8237 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Door Closer	281 Reg / PA	EN	SA
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
3 Silencer	608		RO

Set: 32.0

Doors: 104, 105, 137, 140, 205, 207

Description: RESTROOM

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Push/Pull Plate	RM1020	US32D	RO
1 Door Pull	RM7940-12	US32D	RO
1 Door Closer	281 Reg / PA	EN	SA
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Kick Plate	K1050 10" X 2" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE

Set: 33.0

Doors: 111, 121, 201B, 204, A-103, A-109

Description: STOR / DATA

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lock	84 8204 TRMD	US32D	SA

1 Cylinder	F1 as required	US26D	SA
1 Wall Stop	409 / 446 [as required]	US32D	RO
3 Silencer	608		RO

Set: 34.0

Doors: 132, 210

Description: JAN

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Storeroom Lock	84 8204 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE

Set: 35.0

Doors: 108, A-101A, A-101B, A-102, A-104, A-105, A-107, A-108

Description: OFFICE

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Office Lock	84 8205 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Wall Stop	409 / 446 [as required]	US32D	RO
3 Silencer	608		RO

Set: 36.0

Doors: 201A, 202

Description: PRODUCTION

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Classroom Lock	84 8237 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Wall Stop	409 / 446 [as required]	US32D	RO
3 Silencer	608		RO

Set: 37.0

Doors: 118A

Description: GREEN ROOM - EXT

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Classroom Lock	84 8237 TRMD	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Threshold	1715AK MSES25SS		PE
1 Gasketing	S773D		PE
1 Rain Guard	346C x LAR		PE
1 Sweep	315CN		PE

Set: 38.0

Doors: 117, 119, 120A, 120B, 126A, 126B, 127A, 127B, 128A, 128B, B-102

Description: TOILET / DRESSING

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Privacy Set	LB 49 8265 TRMD	US32D	SA

1 Kick Plate	K1050 4" X 1" LDW 4BE CSK	US32D	RO
1 Wall Stop	409 / 446 [as required]	US32D	RO
1 Gasketing	S773D		PE
1 Coat Hook	RM811	US26D	RO

Set: 39.0

Doors: A-106

Description: CONF / HSPITALITY

3 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
1 Passage Set	8215 TRMD	US32D	SA
1 Wall Stop	409 / 446 [as required]	US32D	RO
3 Silencer	608		RO

Set: 40.0

Doors: 109D, 109E, 109F

Description: ACCESS DOOR

4 Hinge	TA314 4-1/2" x 4-1/2"	US32D	MK
2 Surface Bolt	580-8	US32D	RO
1 Mortise Deadlock	84 4877	US32D	SA
1 Cylinder	F1 as required	US26D	SA

Set: 41.0

Doors: GATE

Description: GATE

1 Rim Exit Device	84 8804	US32D	SA
1 Cylinder	F1 as required	US26D	SA
1 Gate hardware	Closer & Pull by gate mfg		

Set: 42.0

Doors: 106, 122F, 124C, 129A, 135B, 138, 206C, 302B, 135A, 139A, 139B, 206B, 303A, 303B

Description: OH DOOR / SHUTTER / DOUBLE ACTING

1 Cylinder	F1 as required	US26D	SA
1 Hardware	By door mfg		

Set: 43.0

Doors: 118B, 144B

Description: CASED OPEN

1 Cased open	No hardware required		
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END OF SECTION 087100

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. Ceramic mosaic tile.
2. Quarry tile.
3. Porcelain tile.
4. Tile backing panels.
5. Waterproof membrane.
6. Crack isolation membrane.
7. 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 092900 "Gypsum Board" for glass-mat, water-resistant backer board.

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 PREINSTALLATION MEETINGS

- A. Preinstallation 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. 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.
- C. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
 - 2. Full-size units of each type of trim and accessory for each color and finish required.
 - 3. Metal edge strips in 6-inch lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of product.
- C. Product Test Reports: For tile-setting and -grouting products and certified porcelain tile.

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. Installer Qualifications:
 - 1. Installer employs Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers.
- B. 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 type and 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. Waterproof membrane.
 - 2. Crack isolation membrane.
 - 3. Cementitious backer units.
 - 4. 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 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. 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.
- D. 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.

2.3 TILE PRODUCTS

- A. Ceramic Tile Type QT-1: Unglazed square-edged quarry tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Olean; a division of Dal-Tile Corporation.
 - 2. Face Size: 8 by 8 inches.
 - 3. Thickness: 1/2 inch.
 - 4. Wearing Surface: Nonabrasive, smooth.
 - 5. Dynamic Coefficient of Friction: Not less than 0.42.
 - 6. Tile Color and Pattern: Match Architect's sample.
 - 7. Grout Color: Match Architect's sample.
 - 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base: Coved with surface bullnose top edge, face size 5 by 8 inches.
- B. Ceramic Tile Type PCT-1: Unglazed porcelain tile.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
 - 2. Certification: Tile certified by the Porcelain Tile Certification Agency.
 - 3. Face Size: 24 by 36 inches.
 - 4. Face Size Variation: Rectified.
 - 5. Thickness: 10 mm.
 - 6. Face: As indicated.
 - 7. Dynamic Coefficient of Friction: Not less than 0.42.
 - 8. Tile Color, Glaze, and Pattern: Match Architect's sample.
 - 9. Grout Color: Match Architect's sample.
 - 10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.
- C. Ceramic Tile Type PCT-2: Unglazed porcelain tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
 2. Certification: Tile certified by the Porcelain Tile Certification Agency.
 3. Face Size: 24 by 36 inches.
 4. Face Size Variation: Rectified.
 5. Thickness: 10 mm.
 6. Face: As indicated.
 7. Dynamic Coefficient of Friction: Not less than 0.42.
 8. Tile Color, Glaze, and Pattern: Match Architect's sample.
 9. Grout Color: Match Architect's sample.
 10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.
- D. Ceramic Tile Type PCT-3: Unglazed porcelain tile.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
 2. Certification: Tile certified by the Porcelain Tile Certification Agency.
 3. Face Size: 24 by 36 inches.
 4. Face Size Variation: Rectified.
 5. Thickness: 10 mm.
 6. Face: As indicated.
 7. Dynamic Coefficient of Friction: Not less than 0.42.
 8. Tile Color, Glaze, and Pattern: Match Architect's sample.
 9. Grout Color: Match Architect's sample.
 10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.
- E. Ceramic Tile Type PCT-4: Factory-mounted ceramic mosaic tile.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
 2. Composition: Porcelain.
 3. Thickness: 1/4 inch.
 4. Face: Pattern of design indicated, with cushion edges.
 5. Surface: Slip resistant, with abrasive admixture.
 6. Dynamic Coefficient of Friction: Not less than 0.42.
 7. Tile Color and Pattern: Match Architect's sample.
 8. Grout Color: Match Architect's sample.
- F. Ceramic Tile Type WT-1: Unglazed porcelain wall tile.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.

2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 12 by 24 inches.
4. Face Size Variation: Rectified.
5. Thickness: 10 mm.
6. Face: As indicated.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Match Architect's sample.
9. Grout Color: Match Architect's sample.
10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.

G. Ceramic Tile Type WT-2: Unglazed porcelain wall tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 24 by 36 inches.
4. Face Size Variation: Rectified.
5. Thickness: 10 mm.
6. Face: As indicated.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Match Architect's sample.
9. Grout Color: Match Architect's sample.
10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.

H. Ceramic Tile Type WT-3: Unglazed porcelain wall tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
2. Certification: Tile certified by the Porcelain Tile Certification Agency.
3. Face Size: 12 by 24 inches.
4. Face Size Variation: Rectified.
5. Thickness: 10 mm.
6. Face: As indicated.
7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: Match Architect's sample.
9. Grout Color: Match Architect's sample.
10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.

I. Ceramic Tile Type WT-4: Unglazed porcelain wall tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
2. Certification: Tile certified by the Porcelain Tile Certification Agency.

3. Face Size: 3 by 15 inches.
 4. Face Size Variation: Rectified.
 5. Thickness: 10 mm.
 6. Face: As indicated.
 7. Dynamic Coefficient of Friction: Not less than 0.42.
 8. Tile Color, Glaze, and Pattern: Match Architect's sample.
 9. Grout Color: Match Architect's sample.
 10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.
- J. Ceramic Tile Type WT-5: Unglazed porcelain wall tile.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Crossville, Inc.
 2. Certification: Tile certified by the Porcelain Tile Certification Agency.
 3. Face Size: 3 by 15 inches.
 4. Face Size Variation: Rectified.
 5. Thickness: 10 mm.
 6. Face: As indicated.
 7. Dynamic Coefficient of Friction: Not less than 0.42.
 8. Tile Color, Glaze, and Pattern: Match Architect's sample.
 9. Grout Color: Match Architect's sample.
 10. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.
- K. Ceramic Tile Type WT-6: Glazed wall tile.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Marazzi Tile, Inc.
 2. Module Size: 4-1/4 by 12-7/8 inches.
 3. Face Size Variation: Rectified.
 4. Thickness: 5/16 inch.
 5. Face: Pattern of design indicated, with manufacturer's standard edges.
 6. Tile Color and Pattern: Match Architect's sample.
 7. Grout Color: Match Architect's sample.
 8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.
- L. Ceramic Tile Type WT-7: Glazed wall tile.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. American Marazzi Tile, Inc.
 2. Module Size: 4 by 12 inches.
 3. Face Size Variation: Rectified.
 4. Thickness: 7 mm.
 5. Face: Pattern of design indicated, with manufacturer's standard edges.

6. Tile Color and Pattern: Match Architect's sample.
7. Grout Color: Match Architect's sample.
8. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as indicated in drawings.

2.4 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.

2.5 TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C 1178/C 1178M, with manufacturer's standard edges.
 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. American Gypsum.
 - b. Georgia-Pacific Building Products.
 - c. National Gypsum Company.
 2. Core: As indicated.
 3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.6 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.
- B. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems L.P ; KERDI. or a comparable product by one of the following:
 - a. Laticrete International – Hydro Ban Sheet Membrane

2.7 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

- B. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch nominal thickness.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems L.P.; DITRA. or a comparable product by one of the following:
 - a. Laticrete International – Strata Mat

2.8 SETTING MATERIALS

- A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
 - 1. Cleavage Membrane: Asphalt felt, ASTM D 226/D 226M, Type I (No. 15); or polyethylene sheeting, ASTM D 4397, 4.0 mils thick.
- B. Standard Dry-Set Mortar (Thinset): ANSI A118.1.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide LATICRETE INTERNATIONAL; 317 Floor N Wall or a comparable product by one of the following:
 - a. Bostik, Inc.
 - b. Custom Building Products.
 - c. MAPEI Corporation.
 - 2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1. (Dry Set Mortars should not be used with Porcelain Tile or to install tile over cement backer board – use ANSI 118.4)
- C. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide LATICRETE INTERNATIONAL; Tri-Lite or a comparable product by one of the following:
 - a. Bostik, Inc.
 - b. Custom Building Products.
 - c. MAPEI Corporation.
 - 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.
- D. Medium-Bed, Modified Dry-Set Mortar: Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for application thickness of 5/8 inch.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide LATICRETE INTERNATIONAL; Tri-Lite or a comparable product by one of the following:
 - a. Bostik, Inc.
 - b. C-Cure.
 - c. MAPEI Corporation.
 - 2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.

2.9 GROUT MATERIALS

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. High-Performance Tile Grout: ANSI A118.7.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide LATICRETE INTERNATIONAL; Permacolor Select or comparable product by one of the following:
 - a. Bostik, Inc.
 - b. Custom Building Products.
 - c. MAPEI Corporation.
 - 2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.
- C. Water-Cleanable Epoxy Grout: ANSI A118.3.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide LATICRETE INTERNATIONAL; Spectralock 2000 IG (For kitchen areas) or comparable product by one of the following:
 - a. Bostik, Inc.
 - b. Custom Building Products.
 - c. MAPEI Corporation.
 - 2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F, respectively, and certified by manufacturer for intended use.

2.10 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 LATICRETE INTERNATIONAL; NXT Patch or NXT Level Plus or comparable product by one of the following:
 - a. Bostik, Inc.
 - b. Custom Building Products.
 - c. MAPEI Corporation.
- 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. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. Blanke Corporation.

- b. [Ceramic Tool Company, Inc.](#)
 - c. [Schluter Systems L.P.](#)
- 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 product indicated on Drawings or comparable product by one of the following:
 - a. Laticrete International – Stonetech Tile and Stone Cleaner
- E. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
- 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. [Bonsal American, an Oldcastle company.](#)
 - b. [Custom Building Products.](#)
 - c. [Jamo Inc.](#)
 - d. [Southern Grouts & Mortars, Inc.](#)
 - e. [Summitville Tiles, Inc.](#)
 - f. Laticrete Stonetech.

2.11 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 adhesives bonded mortar bed or 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 adhesives or 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. 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. Exterior tile floors.
 - b. Tile floors in wet areas.
 - c. Tile floors consisting of tiles 8 by 8 inches or larger.
 - d. Tile floors consisting of rib-backed tiles.
- 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. Ceramic Mosaic Tile: Per tile manufacturer's recommendation.
 - 2. Quarry Tile: Per tile manufacturer's recommendation.
 - 3. Glazed Wall Tile: Per tile manufacturer's recommendation.
 - 4. Porcelain Tile: Per tile manufacturer's recommendation.
- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- I. 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.
- J. Metal Edge Strips: Install at locations indicated.
- K. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

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.

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 – Quarry Tile: TCNA F112 and ANSI A108.1B; cement mortar bed (thickset) bonded to concrete.
 - a. Ceramic Tile Type: QT-1.
 - b. Bond Coat for Cured-Bed Method: Modified dry-set mortar.
 - c. Grout: Water cleanable epoxy grout.
 - 2. Ceramic Tile Installation – Typical Floor Tile: TCNA F128; thinset mortar on uncoupling membrane.
 - a. Ceramic Tile Type: PCT-1, PCT-2, PCT-3.
 - b. Thinset Mortar: Improved modified dry-set mortar.
 - c. Grout: High-performance sanded grout.

B. Interior Wall Installations, Wood or Metal Studs or Furring:

1. Ceramic Tile Installation Wall Tile: TCNA W243; thinset mortar on gypsum board.
 - a. Ceramic Tile Type: WT-2, WT-4, WT-6, WT-7.
 - b. Thinset Mortar: Modified dry-set mortar.
 - c. Grout: High-performance sanded grout.

2. Ceramic Tile Installation Wall Tile: TCNA W245 or TCNA W248; thinset mortar on glass-mat, water-resistant gypsum backer board.
 - a. Ceramic Tile Type: WT-1, WT-3, WT-5.
 - b. Thinset Mortar: Modified dry-set mortar.
 - c. Grout: High-performance sanded grout.

C. Shower Receptor and Wall Installations:

1. Ceramic Tile Installation - Showers and Wet Areas: TCNA B422; thinset mortar on waterproof membrane with integrated bonding flange for bonded membranes.
 - a. Ceramic Tile Type: PCT-4, WT-1.
 - b. Thinset Mortar: Improved modified dry-set mortar.
 - c. Grout: High-performance sanded grout.
 - d. Shower Drain: Provide linear and square shower drains with integral bonding flange for bonded membranes.

END OF SECTION 093013

SECTION 099000 – INTERIOR PAINTS & COATINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interior paint and coatings systems including surface preparation.
- B. Interior high-performance paint and coatings systems including surface preparation.

1.2 RELATED SECTIONS

- A. Section 033000 - Cast-in-Place Concrete.
- B. Section 042000 - Unit Masonry: Concrete Masonry Units (CMU) and brick.
- C. Section 055113 - Metal Pan Stairs.
- D. Section 230500 - Common Work Results for HVAC.
- E. Section 260500 - Common Work Results for Electrical.

1.3 REFERENCES

- A. Steel Structures Painting Council (SSPC):
 - 1. SSPC-SP 1 - Solvent Cleaning.
 - 2. SSPC-SP 2 - Hand Tool Cleaning.
 - 3. SSPC-SP 3 - Power Tool Cleaning.
 - 4. SSPC-SP5/NACE No. 1, White Metal Blast Cleaning.
 - 5. SSPC-SP6/NACE No. 3, Commercial Blast Cleaning.
 - 6. SSPC-SP7/NACE No. 4, Brush-Off Blast Cleaning.
 - 7. SSPC-SP10/NACE No. 2, Near-White Blast Cleaning.
 - 8. SSPC-SP11, Power Tool Cleaning to Bare Metal.
 - 9. SSPC-SP12/NACE No. 5, Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating.
 - 10. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.
- B. Material Safety Data Sheets / Environmental Data Sheets: Per manufacturer's MSDS/EDS for specific VOCs (calculated per 40 CFR 59.406). VOCs may vary by base and sheen.

1.4 SUBMITTALS

- A. Submit under provisions of Section 013000 - Administrative Requirements.
- B. Product Data: For each paint system indicated, including.
 - 1. Product characteristics.
 - 2. Surface preparation instructions and recommendations.
 - 3. Primer requirements and finish specification.
 - 4. Storage and handling requirements and recommendations.
 - 5. Application methods.
 - 6. Cautions for storage, handling and installation.
- C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors and sheens available.
- D. Verification Samples: For each finish product specified, submit samples that represent actual

product, color, and sheen.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.
- C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish surfaces for verification of products, colors and sheens.
 - 2. Finish area designated by Architect.
 - 3. Provide samples that designate primer and finish coats.
 - 4. Do not proceed with remaining work until the Architect approves the mock-up.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.
 - 1. Product name, and type (description).
 - 2. Application and use instructions.
 - 3. Surface preparation.
 - 4. VOC content.
 - 5. Environmental handling.
 - 6. Batch date.
 - 7. Color number.
- B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
- C. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.
- D. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.
- B. Furnish Owner with an additional one percent of each material and color, but not less than 1 gal (3.8 l) or 1 case, as appropriate.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. 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. Sherwin Williams
 - 2. Glidden Professional
 - 3. Benjamin Moore
 - 4. PPG Pittsburgh Paints
- B. Requests for substitutions will be considered in accordance with provisions of Section 016000 - Product Requirements.

2.2 APPLICATIONS/SCOPE

- A. Interior Paints and Coatings:
 - 1. Masonry: Concrete masonry units, including split-face, scored, and smooth block.
- B. Interior High Performance Paints and Coatings:
 - 1. Concrete: Poured, precast, tilt-up, cast-in-place, cement board.
 - 2. Concrete: Ceilings.
 - 3. Masonry: CMU - concrete, split face, scored, smooth, stucco.
 - 4. Non-Ferrous Metal: Galvanized steel and aluminum.
 - 5. Metal Ferrous: Ceilings, structural steel, joists, trusses, beams, and similar items including dryfall coatings.
 - 6. Wood: Walls, ceilings, doors, trim, cabinet work, and similar items.
 - 7. Drywall: Drywall board, Gypsum board
 - 8. Plaster: Walls, ceilings.

2.3 PAINT MATERIALS - GENERAL

- A. Paints and Coatings:
 - 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
 - 2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufacturer's product instructions for optimal color conformance.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.
- D. Color: Refer to Finish Schedule for paint colors, and as selected.

2.4 INTERIOR PAINT SYSTEMS

- A. MASONRY: CMU - Concrete, Split Face, Scored, Smooth, High Density, Low Density, Fluted.
 - 1. Epoxy Systems (Water Based): **(Walls / Exposed Structural Steel Columns)**
 - a. Eg-Shel/Low Luster Finish:
 - 1) 1st Coat: S-W Loxon Block Surfacer, A24W200 (50-100 sq ft/gal).
 - 2) 2nd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45-Series.

- 3) 3rd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45-Series (4.0 mils wet, 1.5 mils dry per coat).
 - b. Eg-Shel/Low Luster Finish: **(Kitchen and Restroom Areas)**
 - 1) 1st Coat: S-W Loxon Block Surfacer, A24W200 (50-100 sq ft/gal).
 - 2) 2nd Coat: S-W Pro Industrial Water Based Catalyzed Epoxy, B73-360 Series.
 - 3) 3rd Coat: S-W Pro Industrial Water Based Catalyzed Epoxy, B73-360 Series (5.0 mils wet, 2.0 mils dry per coat).
- B. METAL - (Interior Hollow metal Doors, Frames / Interior Stair Components – Stringers, Risers, handrails, etc.)**
1. Alkyd Systems (Water based):
 - a. Semi-Gloss Finish:
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry).
 - 2) 2nd Coat: S-W Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series.
 - 3) 3rd Coat: S-W Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series ((4.0-5.0 mils wet, 1.4 - 1.7 mils dry per coat).
- C. METAL - (Exterior Galvanized Hollow metal Doors / frames)**
1. Alkyd Systems (Water based):
 - a. Semi-Gloss Finish:
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0 mils wet, 2.0 mils dry).
 - 2) 2nd Coat: S-W Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series.
 - 3rd Coat: S-W Industrial Water Based Alkyd Urethane Enamel Semi-Gloss, B53-1150 Series ((4.0-5.0 mils wet, 1.4 - 1.7 mils dry per coat).
- D. WOOD - (Walls, Doors, Trim)**
1. Latex Systems:
 - a. Semi - Gloss Finish:
 - 1) 1st Coat: S-W Premium Wall and Wood Primer, B28W8111 (4 mils wet, 1.8 mils dry).
 - 2) 2nd Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss, B31 Series.
 - 3) 3rd Coat: S-W ProClassic Waterborne Acrylic Semi-Gloss, B31 Series (4 mils wet, 1.3 mils dry per coat).
 2. Stain and Varnish System: **(Lavatory Apron, Dining Cabinets)**
 - a. Gloss Finish:
 - 1) 1st Coat: S-W WoodClassics 250 Stains.
 - 2) 2nd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68 Series.
 - 3) 3rd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68 Series (4 mils wet, 1.0 mil dry per coat).
 - b. Satin Finish:
 - 1) 1st Coat: S-W WoodClassics 250 Stains.
 - 2) 2nd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68 Series.
 - 3) 3rd Coat: S-W WoodClassics Waterborne Polyurethane Varnish, A68 Series (4 mils wet, 1.0 mil dry per coat).
- E. DRYWALL (Walls, Ceilings)**

1. Latex Systems:
 - a. Eg-Shel / Satin Finish: **(Walls)**
 - 1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry).
 - 2) 2nd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series.
 - 3) 3rd Coat: S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2600 Series (4 mils wet, 1.7 mils dry per coat).
 - b. Flat Finish: **(Ceilings)**
 - 1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry).
 - 2) 2nd Coat: S-W ProMar 200 Zero VOC Latex Flat, B30-2600 Series.
 - 3) 3rd Coat: S-W ProMar 200 Zero VOC Latex Flat, B30-2600 Series (4 mils wet, 1.6 mils dry per coat).
2. Epoxy Systems (Water Based):
 - a. Eg-Shel/Low Luster Finish: **(Kitchen and Restroom Areas)**
 - 1) 1st Coat: S-W ProMar 200 Zero VOC Interior Latex Primer, B28W2600 (4 mils wet, 1.5 mils dry).
 - 2) 2nd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45-Series.
 - 3) 3rd Coat: S-W Pro Industrial Pre-Catalyzed Waterbased Epoxy, K45-Series (4 mils wet, 1.5 mils dry per coat).

2.5 HIGH PERFORMANCE INTERIOR PAINT SYSTEMS

A. METAL - **(Ceilings - Structural Steel, Joists, Trusses, Beams)**

1. Dryfall Waterborne Topcoats:
 - a. Flat Finish:
 - 1) 1st Coat: S-W Pro Industrial Pro-Cryl Universal Primer, B66-1310 Series (5.0-10.0 mils wet, 1.8-3.6 mils dry).
 - 2) 2nd Coat: S-W Pro Industrial Waterborne Acrylic Dryfall Flat, B42-80 Series.
 - 3) 3rd Coat: S-W Pro Industrial Waterborne Acrylic Dryfall Flat, B42-80 Series (6.0-9.0 mils wet, 1.5-2.3 mils dry per coat).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.
- C. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.
- D. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
 1. Prior to attempting to remove mildew, it is recommended to test any cleaner on a small, inconspicuous area prior to use. Bleach and bleaching type cleaners may damage or discolor existing paint films. Bleach alternative cleaning solutions are advised.

2. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
 3. Remove items including but not limited to thermostats, electrical outlets, switch covers and similar items prior to painting. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
 4. No exterior painting should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.
- E. Aluminum: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP1, Solvent Cleaning.
- F. Block (Cinder and Concrete): Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement, and hardeners. Concrete and mortar must be cured at least 30 days at 75 degrees F (24 degrees C). The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments. On tilt-up and poured-in-place concrete, commercial detergents and abrasive blasting may be necessary to prepare the surface. Fill bug holes, air pockets, and other voids with a cement patching compound.
- G. Concrete, SSPC-SP13 or NACE 6: This standard gives requirements for surface preparation of concrete by mechanical, chemical, or thermal methods prior to the application of bonded protective coating or lining systems. The requirements of this standard are applicable to all types of cementitious surfaces including cast-in-place concrete floors and walls, precast slabs, masonry walls, and shotcrete surfaces. An acceptable prepared concrete surface should be free of contaminants, laitance, loosely adhering concrete, and dust, and should provide a sound, uniform substrate suitable for the application of protective coating or lining systems.
- H. Cement Composition Siding/Panels: Remove all surface contamination by washing with an appropriate cleaner, rinse thoroughly and allow to dry. Existing peeled or checked paint should be scraped and sanded to a sound surface. Pressure clean, if needed, with a minimum of 2100 psi pressure to remove all dirt, dust, grease, oil, loose particles, laitance, foreign material, and peeling or defective coatings. Allow the surface to dry thoroughly. The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments.
- I. Copper and Stainless Steel: Remove all oil, grease, dirt, oxide and other foreign material by cleaning per SSPC-SP 2, Hand Tool Cleaning.
- J. Exterior Composition Board (Hardboard): Some composition boards may exude a waxy material that must be removed with a solvent prior to coating. Whether factory primed or unprimed, exterior composition board siding (hardboard) must be cleaned thoroughly and primed with an alkyd primer.
- K. Drywall - Exterior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting. Exterior surfaces must be spackled with exterior grade compounds.

- L. Drywall - Interior: Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
- M. Galvanized Metal: Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP16 is necessary to remove these treatments.
- N. Plaster: Must be allowed to dry thoroughly for at least 30 days before painting, unless the products are designed to be used in high pH environments. Room must be ventilated while drying; in cold, damp weather, rooms must be heated. Damaged areas must be repaired with an appropriate patching material. Bare plaster must be cured and hard. Textured, soft, porous, or powdery plaster should be treated with a solution of 1 pint household vinegar to 1 gallon of water. Repeat until the surface is hard, rinse with clear water and allow to dry.
- O. Steel: Structural, Plate, And Similar Items: Should be cleaned by one or more of the surface preparations described below. These methods are used throughout the world for describing methods for cleaning structural steel. Visual standards are available through the Society of Protective Coatings. A brief description of these standards together with numbers by which they can be specified follow.
 - 1. Solvent Cleaning, SSPC-SP1: Solvent cleaning is a method for removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants. Solvent cleaning does not remove rust or mill scale. Change rags and cleaning solution frequently so that deposits of oil and grease are not spread over additional areas in the cleaning process. Be sure to allow adequate ventilation.
 - 2. Hand Tool Cleaning, SSPC-SP2: Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before hand tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 - 3. Power Tool Cleaning, SSPC-SP3: Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.
 - 4. White Metal Blast Cleaning, SSPC-SP5 or NACE 1: A White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
 - 5. Commercial Blast Cleaning, SSPC-SP6 or NACE 3: A Commercial Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 33 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
 - 6. Brush-Off Blast Cleaning, SSPC-SP7 or NACE 4: A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.
 - 7. Power Tool Cleaning to Bare Metal, SSPC-SP11: Metallic surfaces that are prepared

according to this specification, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxide corrosion products, and other foreign matter. Slight residues of rust and paint may be left in the lower portions of pits if the original surface is pitted. Prior to power tool surface preparation, remove visible deposits of oil or grease by any of the methods specified in SSPC-SP1, Solvent Cleaning, or other agreed upon methods.

8. Near-White Blast Cleaning, SSPC-SP10 or NACE 2: A Near White Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining. Staining shall be limited to no more than 5 percent of each square inch of surface area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP1 or other agreed upon methods.
 9. High- and Ultra-High Pressure Water Jetting for Steel and Other Hard Materials: SSPC-SP12 or NACE 5: This standard provides requirements for the use of high- and ultra-high pressure water jetting to achieve various degrees of surface cleanliness. This standard is limited in scope to the use of water only without the addition of solid particles in the stream.
 10. Water Blasting, SSPC-SP12/NACE No. 5: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.
- P. Vinyl Siding, Architectural Plastics, EIFS and Fiberglass: Clean vinyl siding thoroughly by scrubbing with a warm, soapy water solution. Rinse thoroughly. Do not paint vinyl siding with any color darker than the original color, unless the paint system features Sherwin-Williams VinylSafe technology. Painting with darker colors that are not Sherwin-Williams VinylSafe may cause siding to warp. Follow all painting guidelines of the vinyl manufacturer when painting. Only paint properly installed vinyl siding. Deviating from the manufacturer's painting guidelines may cause the warranty to be voided.
- Q. Stucco: Must be clean and free of any loose stucco. If recommended procedures for applying stucco are followed, and normal drying conditions prevail, the surface may be painted in 30 days. The pH of the surface should be between 6 and 9, unless the products are designed to be used in high pH environments such as Loxon.
- R. Wood: Must be clean and dry. Prime and paint as soon as possible. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

3.2 INSTALLATION

- A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.

- F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.
- G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

3.3 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION