ADDENDUM NO. 3

San Rafael City Schools
Terra Linda High School
Innovation Hub

Date: 7 December 2018

Owner: San Rafael City Schools
310 Nova Albion Way
San Rafael, CA 94903

Project: Terra Linda High School
Innovations Hub
320 Nova Albion Way
San Rafael, CA 94903

Architect: Harley Ellis Devereaux
417 Montgomery Street, Suite 400
San Francisco, CA 94104

By: Michael J. Myers, AIA

This Addendum has been prepared to clarify, modify, delete, or add to the drawings and/or specifications for the above referenced project, and revisions to items listed here shall supersede description thereof prior to the above stated date. All conditions not specifically referenced here shall remain the same. It is the obligation of the Prime Contractor to make subcontractors aware of any items herein that may affect submitted bids.

Acknowledge receipt of this addendum by inserting its number and date in the Bid Form. Failure to do so may subject bidder to disqualification.

All addenda items refer to the drawings and specifications unless specifically noted otherwise.

TOTAL PAGES IN THIS ADDENDUM (excluding attachments): 3

PART B – CHANGES TO PROCUREMENT AND CONTRACTING REQUIREMENTS

AD-3.B01 Document 00 21 13 – Instructions to Bidders:

- Change item 29. h. “Not Used” to “Disabled Veteran Business Enterprise Participation Certification.”
- Change item 29. m. “Not Used” to “Imported Materials Certification.”
- Change item 29. o. “Not Used” to “Buy American Certification.”

PART C – CHANGES TO SPECIFICATIONS

AD-3.C01 Section 07 42 13.19 – Insulated Metal Spandrel Panels. Add Section 07 42 13.19 to the project manual.

AD-3.C02 Section 07 52 00 – Modified Bitumen Membrane Roofing. Replace Section 07 52 00 in its entirety and replace with attached 07 52 00.

AD-3.C03 Section 08 11 13 – Hollow Metal Doors and Frames. Replace Section 08 12 13 in its entirety and replace with attached 08 11 13.

AD-3.C04 Section 08 41 13 – Aluminum-Frames Entrances and Storefronts. Replace Section 08 41 13 in its entirety and replace with attached 08 41 13.

AD-3.C05 Section 08 71 00 – Door Hardware. Replace Section 08 71 00 in its entirety and replace with attached 08 71 00.

AD-3.C06 Section 08 88 13 – Fire Resistant Glazing. Add Section 08 88 13 to the project manual.

AD-3.C07 Section 10 11 00 – Visual Display Units. Replace Section 10 11 00 in its entirety and replace with attached 10 11 00.

AD-3.C08 Section 11 52 13 – Projection Screens. Replace Section 11 52 13 in its entirety and replace with attached 11 52 13.

AD-3.C09 Section 12 24 13 – Roller Window Shades. Replace Section 12 24 13 in its entirety and replace with attached 12 24 13.

AD-3.C10 Section 32 13 13 – Concrete Paving. Replace Section 32 13 13 in its entirety and replace with attached 32 13 13.

AD-3.C11 Section 03 35 43 – Polished Concrete Finishing. Replace Section 03 35 43 in its entirety and replace with attached 03 35 43.

PART D – CHANGES TO DRAWINGS

AD-3.D01 Drawing A-101 – Improvement Floor Plan & A-601 - Schedules, Door and Frame Types: add new door with power operator to replace existing door per attached AX1 ADD03.

AD-3.D02 Drawing A-101 – Improvement Floor Plan: Add mechanical unit flashing details per attached AX2 ADD03.

AD-3.D03 Drawing E2.1 – Power Plan: Replace E2.1 with attached E2.1.

AD-3.D04 Drawing E3.1 – Signal Plan: Replace E3.1 with attached E3.1.

PART E – BIDDER QUESTIONS

Question 1: Please specify the required polished concrete system as per the sheen degree, aggregate exposure level and concrete coloring?

Answer: See attached 03 35 43 Part 1.1 A. 2., no color.

Question 2: Is it acceptable to use Tandus Powerbond cushion RS in the same specified style (infinity), which will not require moisture mitigation for the substrate in lieu of the Tandus carpet tile format?

Answer: Tandus Powerbond cushion RS in the same style is acceptable.

Question 3: In regards of the moisture vapor emission control specification, Sec 090561.13, Tarkett (manufacturer) doesn't recommend or warrant a particular product for moisture mitigation. Tarkett installation guide refers to the current ASTM F 3010 Standard Practice for two component Resin Based Moisture Mitigation Systems. The specified product (Synthetic30's) doesn't meet the ASTM 3010 Specifications. Is it acceptable to use 2 part solid moisture system such as Koster Vap 2000 which meets the ASTM 3010 Standards?

Answer: Provide system per specifications.

ATTACHMENTS

Section 07 42 13.19 – Insulated Metal Spandrel Panels
Section 07 52 00 – Modified Bitumen Membrane Roofing
Section 08 11 13 – Hollow Metal Doors and Frames
Section 08 41 13 – Aluminum-Frames Entrances and Storefronts
Section 08 71 00 – Door Hardware
Section 08 88 13 – Fire Resistant Glazing
Section 10 11 00 – Visual Display Units
Section 11 52 13 – Projection Screens
Section 12 24 13 – Roller Window Shades
Section 32 13 13 – Concrete Paving
Section 03 35 43 – Polished Concrete Finishing
AX1 ADD03 – Door & Door Operator
AX2 ADD03 – Mechanical Unit Flashing
E2.1 – Power Plan
E3.1 – Signal Plan

END OF ADDENDUM

SECTION 03 35 43 (ADDENDUM 3)

POLISHED CONCRETE FINISHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Products and procedures for polishing concrete floors.
2. Polished concrete finish in accordance with specified requirements to produce:
   a. Aggregate Exposure: Class B. (Refer to Paragraph 3.3.E).
   b. Polished Concrete Appearance (Finished Gloss Level): Level 2. (Refer to Paragraph 3.3.F).

B. Related Sections:

1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 03 33 00 - Cast-In-Place Concrete.
3. Section 07 92 00 - Joint Sealants.

1.2 DEFINITIONS

A. Polished Concrete: The act of changing a concrete floor surface, with or without surface exposure of aggregate, to achieve a specified level of appearance as defined by Concrete Polishing Council (CPC).

B. Bonded Abrasive Polished Concrete: The multi-step operation of mechanically grinding, honing, and polishing a concrete floor surface with bonded abrasives to cut a concrete floor surface and to refine each cut to the maximum potential to achieve a specified level of appearance as defined by the Concrete Polishing Council (CPC).

1.3 REFERENCES

A. American National Standards Institute (www.ansi.org):

1. B101.3 -Test Method for Measuring Wet DCOF of Common Hard Surface Floor Materials.

B. ASTM International (www.astm.org):

1. D523 – Standard Test Method for Specular Gloss.
2. D4039 – Standard Test method for Reflection Haze of High-Gloss Surfaces.
3. D5767 – Standard Test method for Instrumental Measurement of Distinctness-of-Image (DOI) Glass of Coated Surfaces.

C. Terminology: Concrete Polishing Council's glossary (www.ascconline.org)

1. Definitions.
2. Aggregate Exposure Chart.
3. Concrete Appearance Chart.

1.4 ACTION SUBMITTALS

A. Action Submittals:

1. Product Data: Manufacturer's descriptive data for the following:
   a. Cleaner.
   b. Densifier.
   c. Protector.
2. Manufacturer's approval of applicator certificate. Pre-concrete finishing conference meeting notes.
3. Post-installation testing results:
   a. ASTM D5767 - Distinctness-of-Image, percentage.
   b. ASTM D523 - Standard Test Method for Specular Gloss.

1.5 INFORMATIONAL SUBMITTALS

A. Low-Emitting Certificates: Polishing manufacturer's third party laboratory testing for California Department Public Health Standard Method, Section 01350; low-emitting material compliance for liquid applied products.

1.6 CLOSE-OUT SUBMITTALS

A. Maintenance Data: Submit maintenance data for installed products in accordance with Section 01 78 23 "Operation and Maintenance Data".

1. Cleaning and servicing data.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Deliver 2-gallons of manufacturer's approved cleaning material and maintenance instructions to Owner at Occupancy.

1.8 QUALITY ASSURANCE

A. Installer Qualifications:

1. Five (5) years successful installation experience in work of this Section.
2. Manufacturer approved and accepted installer.

B. Manufacturer:

1. Minimum 10 years successful experience in producing specified materials.
2. Materials are compliant with third party CDPH low-emitting material testing.

C. Mock- Up Approval Conference:

1. Schedule: Four (4) weeks prior to installation.
2. Size: Minimum 100 square feet.
3. Location: Area subjected to direct and indirect sunlight.
4. Attendance: Owner, Architect, IOR, Polishing installer, General Contractor, and Construction Manager.
5. Review and discuss installed mock-up and the following for approval:
   a. Interior environmental requirements.
   b. Review submittal samples.
   c. Review aggregate exposure and appearance requirements.
   d. ASTM D5767 - Distinctness-of-Image requirements.

e. ASTM D4039 - Reflection Haze of High-Gloss Surfaces requirements.
f. Staging and sequencing.
g. Protection of completed work.

6. Mockup may remain as part of the Work when approved by Architect.

1.9 PROJECT CONDITIONS

A. Prohibit concrete surfaces from the following prior to and after application process:

1. Vehicular traffic and pipe cutting operations in, around and above surfaces.
2. Storage of wood, ferrous metals, plastic, or any other materials to prevent damage.
3. Liquid drippings, sprinkler discharge and sprinkler testing on surfaces.
4. Chemical storage, acids and acidic detergents.
5. Prevent painting over surfaces without 100% floor protection from overspray.
6. Diaper all hydraulic lines of equipment that must enter polished floor spaces.

B. Maintain interior room conditions of 50 and 90 degrees F.

C. Ventilate areas to promote proper curing of components.

D. Restrict trade traffic from work areas during and after application process.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design:

1. Lythic by Solomon Colors; (www.lythic.com)

B. Alternate Manufacturers:
1. SpecTru Systems.
2. Substitutions: Section 01 25 13 – Product Options and Substitutions.

2.2 MATERIALS

A. Surface Cleaner: Water-based, colloidal silica blended surfactant, silica dust reducer.

1. Source: Lythic Cleaner by Solomon Colors.
2. VOC Content: 10 grams per liter, maximum.
3. pH Level: 10.0pH, non-hazardous waste per EPA requirements.

B. Hardener and Densifier: Water-based, colloidal silica, odorless, penetrating hardener.

1. Source: Lythic Densifier & XL by Lythic.
2. VOC Content: 50 grams per liter, maximum.
3. pH level: 10.0pH or less, non-hazardous waste per EPA requirements.
4. Reaction: Reaction at application and requires no broom agitation, scrubbing or rinse.

C. Protector: Water-based, penetrating film forming protector, colloidal-silica co-polymer acrylic.

1. Source: Protector by Lythic.
2. VOC Content: 25 grams per liter, maximum

2.3 ACCESSORIES

A. Crack and Joint Treatment: Polyurea-based joint filler by one of the following:

1. Metzger McGuire: www.metzgermcguire.com
2. SealBoss: www.sealboss.com

B. Spall, Surface Defect and Resin Grout Material: Epoxy- Polyurea-based material by one of the following:

1. Quick Mender by VersaFlex; www.versaflex.com
2. TX3 by Hi-Tech Systems; www.hitechpolyurea.com
3. Match Patch Pro; www.matchpatchpro.com

C. Cementititous Grout: Unsanded, fast curing, hydraulic cement-based floor material by one of the following:

1. Rapid Set Skim Coat by CTS Cement; www.ctscements.com

D. Temporary Protection: Seamless, spill, stain and water-resistant sheeting.

1. Ramboard; www.ramboard.com

PART 3 - EXECUTION

3.1 EXAMINATION

A. Review manufacturer's instructions, on-site conditions and submittals.

B. Examine substrate with installer present for conditions affecting work performance of finish.

C. Installation deems acceptance of on-site conditions.

3.2 PREPARATION

A. Clean concrete surface of contaminants and repair imperfections to match adjacent surfaces.

1. Apply manufacturer's cleaner to limit surface scratches and abrasions during process.

B. Protect equipment and previously installed finished from process.

C. Verify mock-up has been approved prior to starting work.

3.3 APPLICATION

A. Install materials in accordance with manufacturer's instructions.

B. Provide continuous aggregate exposure, appearance and materials from wall-to-wall, in accordance to Concrete Polishing Council terminology.

C. Apply a minimum of two (2) coats of hardener and densifier to saturate surfaces.

D. Apply spall, surface defect, crack and joint treatment and grout material to achieve a uniform surface appearance.

E. Perform required process to achieve approved “Class B” aggregate exposure and appearance in accordance with the attached Concrete Polishing Council, Polished Aggregate Exposure Chart.

F. Perform required process to achieve approved “Level 2” appearance in accordance with the attached Concrete Polishing Council, Polished Appearance Chart.

G. Protector:

1. Apply two (2) coats in accordance with manufacturer’s instructions.
2. Burnish to produce maximum appearance and protection repellency properties.

3.4 FIELD QUALITY CONTROL

A. Measure slip resistance in accordance with ANSI B101.3 -Test Method for Measuring Wet Dynamic Coefficient of Friction (DCOF) of Common Hard Surface Floor Materials.

1. Results of 0.60 dry in accordance with Americans with Disabilities Act (ADA) and Occupational Safety and Health Administration (OSHA).

B. Final Floor Testing:

1. Perform a minimum of one (1) test for each 1,000 square feet of polished concrete, per the following:
   a. ASTM D5767 - Distinctness-of-Image.
   b. ASTM D523 - Standard Test Method for Specular Gloss.
2. Final floors to be smooth with no scratches, abrasions or diamond cut marks on concrete surface.
   a. Re-polish floors to remove scratches at no cost to Owner.
3. Do not proceed with protector application until surfaces are compliant with appearance requirements.

3.5 PROTECTION

A. Allow floors to dry and cover with manufacturer approved non-staining, temporary protection.

1. Maintain continuous temporary floor protection until Substantial Completion.

END OF SECTION

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CONCRETE POLISHING COUNCIL
POLISHED CONCRETE AGGREGATE EXPOSURE CHART

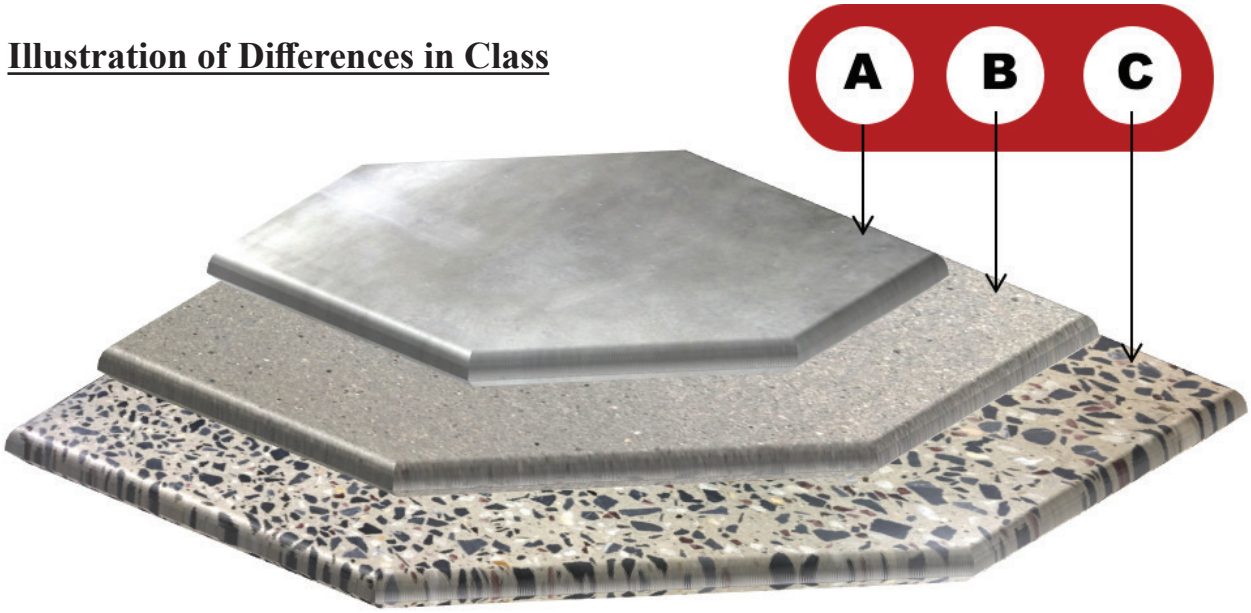
REPLACES CPAA AGGREGATE EXPOSURE CHART

CLASS	NAME	SURFACE EXPOSURE, %
A	Cement Fines	85 – 95 % Cement Fines 5 – 15 % Fine Aggregate
B	Fine Aggregate	85 – 95 % Fine Aggregate 5 – 15 % Blend of Cement Fines and Coarse Aggregate
C	Coarse Aggregate	80 – 90 % Coarse Aggregate 10 – 20 % Blend of Cement Fines and Fine Aggregate

Aggregate exposure class denotes the surface exposure after grinding and polishing operations. The density, size and distribution of the aggregates at the surface depends on the concrete mix design and placing and finishing operations. Floor flatness at the time of grinding and polishing operations is an important consideration in selecting the appropriate aggregate exposure class.

Surface exposure percentages are based on visual observation of the overall area of the polished floor.

Illustration of Differences in Class



Caution: This provides a visual representation of the differences in Class A, B and C. This may not represent the polished concrete in your area as it varies based on aggregate type, gradation, size and distribution. Consult with your CPC Polishing Contractor to see reference samples or mockups.

Contact your Concrete Polishing Council (CPC) contractor or the CPC Hotline at (844) 923-4678 or by email at cpchotline@ascconline.org with any questions.

CONCRETE POLISHING COUNCIL

POLISHED CONCRETE APPEARANCE CHART

REPLACES CPAA FINISHED GLOSS CHART

LEVEL	NAME	DISTINCTNESS-OF-IMAGE (DOI) GLOSS	IMAGE CLARITY VALUE, %	HAZE INDEX
1	Flat (Ground)	Images of objects being reflected have a flat appearance.	0 – 9	<10
2	Satin (Honed)	Images of objects being reflected have a matte appearance.	10 – 39	
3	Polished	Images of objects being reflected do not have a sharp and crisp appearance but can be easily identified.	40 – 69	
4	Highly Polished	Images of objects being reflected have a sharp and crisp appearance as would be seen in a near-mirror like reflection. May require grouting.	70 – 100	

- Distinctness-of-Image (DOI) Gloss
  - DOI is the sharpness of images of objects produced by reflection at a polished surface, sometimes called image clarity.
  - Measurement by Image Clarity Meter (ASTM D5767): The DOI, Image Clarity Value, obtained from this test method, range from 0 to 100 with a value of 100 representing perfect DOI (image clarity).
- Haze
  - Haze is the cloudiness or milky appearance of images of objects produced by reflection in a polished surface.
  - Measurement by Glossmeter (ASTM D4039): The Haze Index, obtained from this test method, is computed using the numeric difference between the value of specular gloss at 60° and the value of specular gloss at 20°.
- Measurements for Compliance
  - The Image Clarity Meter and Glossmeter must be calibrated and used in accordance with ASTM D5767 and ASTM D4039.
  - The minimum number of tests distributed across the polished surface should be three for areas up to 1000 ft^2 and one additional test for each 1000 ft^2 or fraction thereof. This applies to both the Image Clarity Value and Haze Index.
  - The mean (average) values of the test results should be used to evaluate compliance with this chart.

Contact your Concrete Polishing Council (CPC) contractor or the CPC Hotline at (844) 923-4678 or by email at cpchotline@ascconline.org with any questions.

SECTION 07 42 13.19 (ADDENDUM 3)

INSULATED METAL SPANDREL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Metal spandrel panels for installation in aluminum storefront. Panels consist of metal skins laminated to stabilizer substrates with an insulating core material. Panels are designed to be glazed into a window system.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Section 08 41 13 – Aluminum-Framed Entrances and Storefronts: Metal spandrel panels used as infill glazing.
2. Section 08 80 00 – Glazing: Glazing sealant.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the formwork only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

B. American Architectural Manufacturers Association (AAMA)
1. 605.2-92 High Performance Organic Coatings on Aluminum - (Kynar)

C. ASTM International:
1. ASTM D1781 - Climbing Drum Peel Test for Adhesives.
2. ASTM D2794 - Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
3. ASTM D3359 - Method for Measuring Adhesion by the tape test.
4. ASTM D3363 - Method for Film Hardness by Pencil Test.
5. ASTM E330 - Structural Performance of Exterior Windows, Curtain Walls and Doors under the influence of wind loads.

D. Porcelain Enamel Institute (P.E.I.):
1. ASTM-C-282 - Spot Acid.
2. ASTM-C-283 - Boiling Acid.
3. ASTM-C-703 - Antimonium Chloride Spall Test.
4. ASTM-C-346 - Gloss Retention.
5. ASTM-C-486 - Spall Resistance.
6. Brunnel Hardness - 600-700.

1.3 SUBSTITUTIONS

A. The materials and products specified in this section establish a minimum standard of required function, design, appearance quality and warranty to be met by any proposed substitution.

1.4 ACTION SUBMITTALS

A. Submittal procedures and quantities are specified in Section 01 33 00 – Submittals.

B. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

C. Shop Drawings: Include information not fully detailed in manufacturer's standard product data and the following:

1. Layout and installation details, including anchors.
2. Full-size section details of typical composite members.
3. Installation details.

D. Samples:

1. Panel makeup: 2 samples, each 10" x 10".
2. Two samples of each color and finish texture: 3" x 5".

1.5 CLOSEOUT SUBMITTALS

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

1.6 QUALITY ASSURANCE

A. Panel manufacturer shall have a minimum of 25 years experience.

B. Field measurements shall be taken prior to completion of manufacturing and cutting.

C. Maximum deviation from vertical and horizontal alignment of installed panels is 1/8" in 20 feet, non-commutative.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver infill panels and accessories in manufacturer's original packaging, clearly identified with manufacturer's name, name and type of product, and finish.

B. Store panels off the ground in an upright position, protected from the weather and other sources of damage.

C. Handle to prevent twisting and other damage.

D. Comply with additional requirements of the manufacturer.

1.8 PROJECT CONDITIONS

A. Field Measurements: Check openings by accurate field measurement before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 WARRANTY

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

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

a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.

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

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

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

a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

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

PART 2 - PRODUCTS

2.1 INSULATED METAL SPANDREL PANELS Drawing Designation: GT-4

A. Laminated metal faced panels as manufactured by Mapes Industries, Inc.; www.mapes.com

1. Basis-of-Design Product for Non-Rated Spandrel Panel: Mapes-R™ Insulated Composite Panel.

B. Acceptable Alternatives: Panels having similar composite construction and finish providing manufacturer has a minimum of 25 years panel laminating experience and comparable published warranties.

C. Manufacturer shall produce the aluminum skin and laminate the panel in the same controlled manufacturing environment.

2.2 PANEL FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Composition: Two sheets of aluminum bonded to stabilizer substrates with a insulative core.

C. Exterior Substrate: 1/8” tempered hardboard.

D. Core: 2-lb density polystyrene, 3/4 inch thick.

E. Interior Substrate: 1/8” tempered hardboard.

F. Aluminum Faces: Manufacturer’s standard thickness.

G. Tolerances: 0.8% of panels dimension length and width; ± 1/16" thickness.

H. Panel Thickness: Nominal 1” thick.

I. R-Value: 4.73.

J. U-Value: 0.21.

2.3 FINISH

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Exterior Finish: Clear Anodized Class 1.

D. Interior Finish: Smooth Primed Aluminum.

1. Color as selected by Architect.

2.4 ACCESSORIES

A. Recommended for use as an infill panel component in window systems. Related material to complete installation as recommended by the manufacturer.

B. Seals against moisture intrusion as recommended by the manufacturer. Polyurethane and silicone based sealants with a 20 year life are recommended.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Panel surfaces shall be free from defects prior to installation.

B. Inspect framed openings before beginning installation.

3.2 INSTALLATION

A. Comply with manufacturer’s specifications and recommendations for installation of panels.

B. Erect panels plumb, level and true.

C. Glaze panels securely and in accordance with approved shop drawings and manufacturer’s instructions to allow for necessary thermal movement and structural support.

D. Do not install panels that are observed to be defective including warped, bowed, dented, scratched and delaminating components.

E. Weatherseal all joints as required using methods and materials as previously specified.

F. Separate dissimilar metals using gasketed fasteners and blocking to eliminate the possibility of electrolytic reaction.

G. Install panels in accordance with Section 08 80 00.

3.3 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

11/07/18

SECTION 07 52 00 (ADDENDUM 3)

MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. The work under this contract shall include all, labor, materials, tools, transportation, equipment, services, and facilities necessary for, and reasonably incidental to, the completion of the work as shown on the drawings and/or described in the specifications, for the following scope of work:

1. Roof installation scope of work:
   a. Mechanically attach insulation.
   b. Install base ply in hot asphalt.
   c. Install a modified bitumen cap sheet.
   d. Fabricate and install all new sheet metal.
   e. Install a base sheet and a mineral surfaced modified membrane at all perimeter and projection baseflashings.
   f. Coat all roof and flashing surfaces.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections

1. Section 07 62 00 – Sheet Metal Flashing and Trim.

1.2 REFERENCES

A. ASTM International:

1. ASTM B69 - Standard Specification for Zinc Sheet.
2. ASTM D41 - Specification for Asphalt Primer Used in Roofing, Damp proofing, and Waterproofing.
3. ASTM D312- Specification for Asphalt Used in Roofing.
3. ASTM D5147 - Test Method for Sampling and Testing Modified Bituminous Sheet Materials
4. ASTM E108 - Test Methods for Fire Test of Roof Coverings.

1.3 PREINSTALLATION MEETING

A. Pre-application Roofing Conference: Approximately 2 weeks before scheduled commencement of modified bituminous membrane roofing system and associated work, meet at Project site with Installer, installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in the around roofing that must precede or follow roofing work (including mechanical work if any), Owner's representative/Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, test agencies, and governing authorities. Objectives to include:

1. Review foreseeable methods and procedures related to roofing work.

2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations, and other preparatory work performed by other trades.

3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.

4. Review roofing systems requirements (drawings, specifications, and other contract documents).

5. Review required submittals, both completed and yet to be completed.

6. Review and finalize construction schedule related to roofing work and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

7. Review required inspection, testing, certifying, and material usage accounting procedures.

8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).

9. Record (contractor) discussion of conference, including decisions and agreements (or disagreements) reached, and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.

10. Review notification procedures for weather or non-working days.

1.4 ACTION SUBMITTALS

A. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements. Include data substantiating that materials comply with the minimum specified requirements including rubber content, low temperature flexibility, tensile strength, tear strength, and amount of recycled content (post consumer and post industrial).

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:

1. Base flashings and membrane terminations.
2. Insulation, including slopes.
3. Crickets, saddles, and tapered edge strips, including slopes.

C. Samples: Submit four (4) samples of the following:

1. Cap Sheet.
2. SBS Modified Base Sheet.

D. Specimen Warranty: Provide an unexecuted copy of the 30 year No Dollar Limit water tight warranty covering every part of the Built Up Roofing system specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.

E. Any material submitted as equal to or better than the specified material must be accompanied by a report signed and sealed by a professional engineer licensed in the state

in which the installation is to take place. This report shall show that the submitted equal meets the Design and Performance criteria in this specification.

F. Substitution requests submitted without licensed engineer stamp will be rejected for non-conformance.

1.5 INFORMATIONAL SUBMITTALS

A. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.

B. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.

C. Manufacturer's Certificate: Certify that the roof system furnished is approved or accepted by Factory Mutual Approval Standard 4470.

D. Manufacturer's Certificate: Certify that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.

E. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.

F. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147.

G. Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.

H. Design Wind Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7-10, Method 2 for Components and Cladding, sealed by a registered professional structural engineer employed by the system manufacturer as a full-time staff engineer. In no case shall the design loads be taken to be less than those detailed in Design and Performance Criteria article of this specification.

I. Qualification data for firms and individuals identified in Quality Assurance Article below.

J. Notarized statement from the Roofing System Manufacturer, signed by an Officer of the Corporation with the Corporate Seal affixed there to stating that the Roofing System Manufacturer will provide field inspections three times a week during the entire period of installation until all construction is completed and to be performed by a full time employee of the manufacturer at no additional cost to the owner.

1.6 CLOSEOUT SUBMITTALS

A. General: Comply with Requirements of Section 01 77 00 – Contract Closeout and Final Cleaning: Submittals.

B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.

C. Roofing Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.

D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

E. Demonstration and Training Schedule: Provide a schedule of proposed dates and times for instruction of Owner's personnel in the maintenance requirements for completed roofing work. Refer to Part 3 for additional requirements.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Installer (Roofing) shall be specializing in modified bituminous roof application with minimum 5 years experience and who is certified by the roofing system manufacturer as qualified to install manufacturer's roofing materials.

B. It is the intent of this specification to provide a roof system with an external fire rating. The descriptions given below are general descriptions. The insulation, recovery board, and other components shall be as required by the membrane manufacturer to provide a Class A fire resistance rating.

C. Installer's Field Supervision: Require Installer to maintain a full-time Supervisor/Forman on the job site during all phases of modified bituminous sheet roofing work and at any time roofing work is in progress: proper supervision of workmen shall be maintained. A copy of the specification shall be in the possession of the Supervisor/Foremen and on the roof at all times.

D. It shall be the Contractor's responsibility to respond immediately to correction of roof leakage during construction.

E. Disqualification of Bidders: A Bidder can be disqualified by the Owner's representative or Owner for any of the following reasons, but not limited to:

1. The failure to attend the Pre-Bid conference at the time and place so described under Bidding Dates.

2. Incorrect use of the "Proposal" as provided by the Owner's representative/Owner. Any changes in said format shall be accepted by the Owner's representative/Owner only when requested and approved in writing prior to the bid opening. Changes in the Proposal after the opening of the bids will not be accepted.

3. Lack of proficiency as shown by past work or incomplete work under other contracts which, in the judgment of the Owner's representative/Owner, might hinder or prevent the prompt completion of additional work if so awarded or any involvement in any legal actions which relate to past or present performance. This includes, but is not limited to, law suits, court appointed actions, and/or ongoing litigation.

F. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.

B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to ensure no possibility of significant moisture exposure. Store rolls of felt and other sheet materials on

pallets or other raised surface. Stand all roll materials on end. Cover roll goods with a canvas tarpaulin or other breathable material (not polyethylene).

C. Do not leave unused rolled goods on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.

D. Handle and store materials or equipment in a manner to avoid significant or permanent deflection of deck.

1.9 MANUFACTURER'S INSPECTIONS

A. When the project is in progress, the Roofing System Manufacturer will provide the following:

1. Keep the Owner's representative informed as to the progress and quality the work as observed.

2. Provide job site inspections a minimum of three days a week.

3. Report to the Owner's representative in writing, any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.

4. Confirm, after completion of the project and based on manufacturer's observations and tests, that manufacturer has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.10 PROJECT CONDITIONS

A. Weather Condition Limitations: Do not apply roofing membrane during inclement weather or when a 40% chance of precipitation is expected.

B. Do not apply roofing insulation or membrane to damp deck surface.

C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

D. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.

1.11 SEQUENCING AND SCHEDULING

A. Sequence installation of modified bituminous sheet roofing with related units of work specified in other sections to ensure that roof assemblies, including roof accessories, flashing, trim, and joint sealers, are protected against damage from effects of weather, corrosion, and adjacent construction activity.

B. All work must be fully completed on each day. Phased construction will not be accepted.

1.12 WARRANTY

A. Membrane Manufacturer upon completion of installation, and acceptance by the Owner and Owner's representative, the manufacturer will supply to the Owner a 30 year labor and material warranty.

B. Contractor will submit a minimum of a two year warranty to the membrane manufacturer with a copy directly to Owner.

PART 2 - PRODUCTS

2.1 GENERAL

A. When a particular trade name or performance standard is specified it shall be indicative of a standard required. Provide materials by: The Garland Company, Jay Mulligan, (415) 971-2739 (Basis-of-Design) or approved equal from Firestone Building Products, GAF, Johns Manville, Siplast, Soprema, Inc., or Tremco Incorporated.

B. Any item or materials submitted as an alternate to the manufacturer specified must comply in all respects as to the quality and performance, including job site investigation of the brand name specified. The Owner's representative/Owner shall be the sole judge as to whether or not an item submitted as an equal is truly equal. Should the contractor choose to submit on the equal basis, he shall assume all risk involved, monetary or otherwise, should the Owner's representative/Owner find it unacceptable.

2.2 DESIGN AND PERFORMANCE CRITERIA

A. Uniform Wind Uplift Load Capacity:

1. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria. Attachment shall be installed exactly as given in Part 3. (To be included with bid documents)
   a. Design Code: ASCE 7-10, Method 2 for Components and Cladding.
   b. Risk Category: III.
   c. Wind Importance Factor: 1.0.
   d. Wind Speed: 120 MPH.
   e. Exposure Category: C

2.3 ROOF INSULATION

A. Rigid polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289 / FS HH-I-1972. EnergyGuard™ Polyiso Insulation, with the following characteristics:

1. Board Thickness: As indicated. Available in a variety of thicknesses, from 1/2-inch to 4.6 inches.
2. Thermal Resistance (LTTR value) of: R5.6 per inch.

B. Tapered rigid polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289 / FS HH-I-1972. EnergyGuard™ Tapered Polyiso Insulation, with the following characteristics:

1. Board Thickness: Tapered.
2. Thermal Resistance (LTTR value) of: Varies.

2.4 SUBSTRATE BOARD (ROOF COVER BOARD)

A. DensDeck® Prime, as manufactured by Georgia-Pacific; www.georgiapacific.com

1. 1/2” thickness.
2. Width: 4 feet.
3. Length: 8 feet.
4. Surfacing: Fiberglass mat with non-asphaltic coating.

2.5 MEMBRANE ROOFING

A. Materials: Insulation, modified base sheet, and modified capsheet membrane and surfacing.

1. Base Ply: the smooth surfaced modified membrane will be: Stressbase 80, SBS modified base sheet.

2. Modified Membrane: Stressply Plus FR Mineral. Dual reinforced, fire resistant, SBS modified bitumen.

3. Base flashing base ply: HPR Tribase.

4. Flashing capsheet: 135 mil mineral surfaced modified membrane.

2.6 MODIFIED BITUMEN MEMBRANE PERFORMANCE REQUIREMENTS

A. Tensile Strength, ASTM D 5147:

1. 2 in/min. @ 73.4 ± 3.6 °F MD 200 lbf/in XD 200 lbf/in

B. Tear Strength, ASTM D 5147:

1. 2 in/min. @ 73.4 ± 3.6 °F MD 300 lbf XD 300 lbf

C. Elongation at Maximum Tensile, ASTM D 5147

1. 2 in/min. @ 73.4 ± 3.6 °F MD 3.5% XD 3.5%

D. Low Temperature Flexibility, ASTM D 5147, Passes -30 degreesF (-34

2.7 BITUMINOUS MATERIALS

A. Primer: V.O.C. compliant, ASTM D-41.

B. Asphalt Roofing Mastic: V.O.C. compliant, Silver Flash, ASTM D-2822, Type II.

C. Asphalt: ASTM D312, Type IV. Trumbull® Trulo® Max, Low-Odor, Low-Fuming Asphalt; or equal.

2.8 RELATED MATERIALS

A. Caulking and sealant: Tuff-Stuff urethane caulking.

B. Zinc pipe flashing: ASTM B69, 99.95% pure zinc. Zincjak: Commercial Innovations, www.commercialinnovations.com.

1. Thickness: 0.02”.
2. Pipe flashing: Interior coated.
3. Lead free solder for zinc: SN 100C, Aim Solder, http://www.aimsolder.com
4. Flux for zinc: #17 or #70, Superior Flux Mfg. Co., www.superiorflux.com

2.9 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with other roofing system components.

B. Insulation Adhesive: Basis-of-Design Product: Garland Insul-Lock® HR, a highly elastomeric, one-step, VOC compliant, hiogh-rise roof insulaton adhesive that contains no solvents and sets in minutes.

1. Tensile Strenth (ASTM D412): 250 psi.
2. Density (ASTM D1875): 8.5 lbs./gal.
3. Viscosity (ASTM D2556): 22,000 – 60,000 cP.
4. Peel Strength (ASTM D903): 17 lb./in.
5. Flexibility (ASTM D816): Pass @ -70 degrees F.
6. VOC content: 0 g/l.

2.10 SURFACING

A. White Elastomeric Roof Coating: Pyramic; Energy Star approved white acrylic roof coating as indicated on drawings:

1. Reflectance 81%.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrate surfaces to receive modified bitumen sheet roofing system and associated work and conditions under which roofing will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing modified bitumen roofing system.

B. Insurance/Code Compliance: Where required, install and test modified bitumen roofing system to comply with governing regulations and specified insurance requirements.

C. Protect other work from spillage of modified bitumen roofing materials, and prevent liquid materials from entering or clogging drains and conductors. Replace or restore other work damaged by installations of modified bituminous roofing system work.

D. Coordinate installing roofing system components so that insulation and roofing plies are not exposed to precipitation or left exposed overnight. Provide cut offs at end of each day's work to cover exposed ply sheets with two (2) plies of #15 organic felt set in mastic and with joints and edges sealed with roofing cement. Remove cut offs immediately before resuming work.

E. Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

H. Apply roofing materials as specified herein unless recommended otherwise by manufacturer's instructions. Keep roofing materials dry before and during application. Do not permit phased construction. Complete application of roofing plies, modified sheet and

flashing in a continuous operation. Begin and apply only as much roofing in one day as can be completed that same day.

I. Fume Recovery System: Contractor shall have a fume recovery system in continuous operation while the kettle is in operation. Cleasby Fume Eliminator; www.cleasby.com; or equal.

3.3 INSULATION AND BASE SHEET ATTACHMENT

A. General:

1. Attach base layer of insulation with insulation adhesive per par. 2.9.B.
2. All subsequent layers and cover board insulation shall be installed in hot asphalt.

B. Install roof insulation in not less than 2 layers with joints of each succeeding layer parallel and offset in both directions with respect to the layer below.

C. Install only as much insulation as can be completely covered with roofing on the same day. At the end of each days work, seal the edges of the insulation with 18-inch wide strips of felt adhered with either hot asphalt or plastic roof cement to both the deck and the completed roof membrane. Remove these strips before continuing application of insulation.

D. First Layer on Metal Decks: Apply first layer of insulation board directly to metal deck and secure it to deck with insulation adhesive as recommended by the manufacturer to meet Underwriters Laboratories or Factory Mutual 1-90 wind uplift requirements. Insulation joints parallel to ribs of deck shall occur on solid surfaces only, not over open ribs.

E. Subsequent Layer(s): Install additional layer(s) of insulation board as necessary to achieve the specified R-value or thickness. Apply insulation in a mopping of hot asphalt applied at the rate of 25-pounds per 100-square feet.

F. Cover Boards: Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.

1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
2. Cut and fit cover board tight to nailers, projections, and penetrations.
3. Adhere cover board to substrate using hot asphalt.

3.4 BASE PLY INSTALLATION

A. Base ply: Install base ply shingled uniformly to achieve one ply throughout over the prepared substrate. Shingle in proper direction to shed water on each area of roof.

B. Stagger end laps twelve inches minimum.

C. Extend ply two inches beyond top edges of cants at wall and projection bases.

D. Install base flashing ply to all perimeter and projections details.

3.5 MODIFIED MEMBRANE APPLICATION

A. Starting at the low point, apply StressPly IV UV Mineral in the desired position.

B. Care should be taken to eliminate air entrapment under the membrane.

C. Apply pressure to all seams to ensure that the laps are solidly bonded to substrate.

D. Subsequent rolls of modified shall be installed across the roof as above with a minimum of 4" side laps and 8" end laps. The end laps shall be staggered. The modified membrane shall be laid in the same direction as the underlayers, but the laps shall not coincide with the laps of the base layers. Adhere all end laps with mastic.

E. Extend membrane 2” beyond top edge of all cants in full moppings of the specified asphalt as shown on the drawings.

F. Seal top of membrane at end of each day.

G. Base and should be installed same day.

3.6 FLASHING MEMBRANE APPLICATION (GENERAL)

A. All curb, wall and parapet flashings shall be sealed with an application of mastic and mesh on a daily basis. No condition should exist that will permit moisture entering behind, around, or under the roof or flashing membrane.

B. Prepare all walls, penetrations and expansion joints to be flashed and where shown on the drawings, with asphalt primer at the rate of one gallon per 100 square feet Allow primer to dry tack free.

C. The modified membrane will be used as the flashing membrane and will be adhered to an underlying base flashing ply and nailed off 8” O.C. at all vertical surfaces. Over 12" the modified membrane will be 80 mils with a mineral cap sheet installed over the top.

D. The entire sheet of flashing membrane must be solidly adhered to the substrate.

E. Seal all vertical laps of flashing membrane with a three course application of Flashing Bond and fiberglass mesh.

F. Counter flashing, cap flashings, expansion joints, and similar work to be coordinated with modified bitumen roofing work are specified in other sections.

G. Roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices to be coordinated with modified bituminous roof system work are in other sections.

H. Ensure all flashing are nailed off and sealed with a three course application of mastic and mesh.

3.7 APPLICATION OF SURFACING

A. Prior to installation of surface, obtain approval from manufacturer as to work completed.

B. Apply Pyramic at two gallons per sq. per coat. Apply two coats.

3.8 CLEANING

A. Remove drippage of bitumen from all walls, windows, floors, ladders, and finished surfaces.

B. In areas where finished surfaces are soiled by asphalt or any other sources of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and conform to their instructions.

3.9 FINAL INSPECTION

A. At completion of roofing installation and associated work, meet with Installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with the performance of the roofing system.

B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each parting attending.

C. The Roofing System Manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the Roofing Contractor at a negotiated price.

D. If core cuts verify the presence of damp or wet materials, the Roofing Contractor shall be required to replace the damaged areas at his own expense.

E. Repair or replace (as required) deteriorated or defective work found at time above inspection to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

F. The Contractor is to notify the Owner upon completion of corrections.

G. Following the final inspection, acceptance will be made in writing by the material manufacturer.

END OF SECTION

11/07/18

SECTION 08 11 13 (ADDENDUM 3)

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Interior standard steel frames.
2. Exterior standard steel doors and frames.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Section 08 14 16 “Flush Wood Doors”.
2. Section 08 71 00 “Door Hardware” for door hardware for hollow-metal doors.
3. Section 08 81 13 “Fire-Resistant Glass” for glazing for hollow metal doors.
4. Section 09 91 00 “Painting” for field applied finish.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the references. Refer to Section 01 42 19 for information concerning availability and use of references.

American National Standards Institute (ANSI)
ASTM International (ASTM)
National Fire Protection Association (NFPA)
National Association of Architectural Metal Manufacturers (NAAMM)
Steel Door Institute (SDI)

1.3 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.4 COORDINATION

A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

B. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal cutouts and reinforcement for door hardware, electric devices and recessed items.

C. Coordinate work with frame opening construction, door and hardware installation.

D. Sequence installation to accommodate required door hardware.

E. Verify field dimensions for factory assembled frames prior to fabrication.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, and finishes.

B. Shop Drawings: Include the following:

1. Elevations of each door and frame type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.

C. Templates: Secure templates from finish hardware supplier for specified hardware and mounting locations.

D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

E. Submittal procedures and quantities are specified in Section 01 33 00.

1.6 QUALITY ASSURANCE

A. Provide doors and frames meeting the requirements of either SDI A250.8 or NAAMM HMMA 861 for standard sizes and designs.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic or canvas shelters that create a humidity chamber. If the wrapper on the door becomes wet, remove the wrapper immediately.

1. Provide additional protection to prevent damage to factory-finished units.

B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Mark or tag each door and frame with the appropriate opening identification symbol.

1.8 WARRANTY

A. Warranty: Manufacturer and Installer agree to repair or replace hollow metal frames that fail in materials or workmanship within specified warranty period.

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Acceptable manufacturers or equal:

Amweld Building Products, Inc.; www.blackmountaindoor.com
Ceco Corp.; www.cecodoor.com
Curries Company; www.curries.com; an Assa Abloy Group company.
Door Components; www.doorcomponents.com
Forderer Cornice Works; www.fordererdoors.com
Republic Builders Products Corporation; www.republicdoor.com
Steelcraft Manufacturing Co.; www.steelcraft.com
Titan Metal Products; www.titanmetalinc.com
Substitutions: Section 01 25 13 – Product Options and Substitutions.

2.2 INTERIOR STANDARD STEEL FRAMES

A. Construct hollow-metal frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra Heavy-Duty Frames: SDI A250.8, Level 3.

1. Physical Performance: Level A according to SDI A250.4.

2. Frames:

a. Materials: ASTM A1008, uncoated, steel sheet, minimum thickness of 16 gauge (0.053 inch).
b. Construction: Full profile welded, grind welds smooth.

3. Exposed Finish: Prime.

2.3 EXTERIOR STANDARD HOLLOW-METAL DOORS AND FRAMES

A. Construct hollow metal doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3.

1. Physical Performance: Level A according to SDI A250.4.
2. Doors:

a. Type: As indicated in the Door and Frame Schedule.
b. Thickness: 1-3/4 inches.
c. Face: ASTM A653, metallic-coated steel sheet, minimum thickness of 16 gauge (0.053 inch), with minimum A60 coating.
d. Edge Construction: Model 2, Seamless
e. Edge Bevel: Provide manufacturer’s standard beveled or square edges.

f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
g. Bottom Edges: Close bottom edges of doors with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
h. Core: Kraft-paper honeycomb.

3. Frames:
a. Materials: ASTM A653, Metallic-coated steel sheet, minimum thickness of 14 gauge (0.067 inch), with minimum A60 coating.
b. Construction: Face welded, grind welds smooth.
c. Face Frame Dimension: 2 inches typical.

4. Exposed Finish: Prime.

2.4 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, suiteable for performance level indicated.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
4. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Where indicated, provide floor anchors for each jamb and mullion that extends to floor. Form floor anchors from same material as frames, minimum thickness of 0.042 inch, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

C. Material: ASTM A 879/A 879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

2.5 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.

C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

F. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and

smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

G. Glazing: Comply with requirements in Section 08 88 13 "Fire-Resistant Glazing."

2.6 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors:

1. Vertical Edges for Single-Acting Doors: Provide beveled or square edges at manufacturer's discretion.
2. Top Edge Closures: Close top edges of doors with 14 gauge inverted galvannealed channel, except provide 24 gage galvannealed top cap at exterior doors.
3. Bottom Edge Closures: Close bottom edges of doors with 14 gauge galvannealed channel with end closures of same material as face sheets.
4. Exterior Doors: Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

C. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
2. Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
3. Jamb Anchors: Provide number and spacing of anchors as follows:

    a. Stud-Wall Type: Locate anchors not more than 18 inches from top and 9 inches from bottom of frame. Space anchors not more than 32 inches o.c. and as follows:

        1) Three anchors per jamb up to 60 inches high.
        2) Four anchors per jamb from 60 to 90 inches high.
        3) Five anchors per jamb from 90 to 96 inches high.
        4) Five anchors per jamb plus one additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.

    b. Compression Type: Not less than two anchors in each frame.
    c. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

4. Head Anchors: Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
5. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

    a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
    b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
2. Comply with applicable requirements in SDI A250.6, SDI A250.8, and BHMA A156.115 for preparation of hollow-metal work for hardware, except provide 8-gage minimum hinge reinforcement for exterior doors.

F. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.7 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

B. Field Finish: Field finish painting is specified in Section 09 91 00.

2.8 GLAZING

A. Vision Frames for Glass Lites: Provide glazed openings with not lighter than 0.040-inch (20-gage) galvanized steel vision frames, factory primed. Frames shall be nonremovable on exterior or corridor side of door. Glass and glazing materials and methods are specified in Section 08 80 00. Acceptable products, or equal:

Anemostat Door Products; www.anemostat.com; LoPro-G Metal Vision Frame

1. Aesthetics: Tight mitered corners, beveled glass stop and low profile, provide a clean tapered look.

B. Glazing for Door Lites: Glass and glazing materials and methods are specified in Section 08 88 13.

2.9 CLEARANCES

A. Provide doors and frames with clearances in accordance with SDI A250.8 or NAAMM HMMA 861.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.

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

3.2 PREPARATION

A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

B. Hollow-Metal Frames: Comply with SDI A250.11 or NAAMM-HMMA 840 as required by standards specified.

1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.

    a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    b. Install frames with removable stops located on secure side of opening.
    c. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    d. Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.

2. Fire-Rated Openings: Install frames according to NFPA 80.

3. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.

    a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

4. Solidly pack mineral-fiber insulation inside frames.

5. Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:

    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Steel Doors:

    a. Between Door and Frame Jambs and Head: 1/8 inch plus or minus 1/32 inch.
    b. Between Edges of Pairs of Doors: 1/8 inch to 1/4 inch plus or minus 1/32 inch.
    c. At Bottom of Door: 5/8 inch plus or minus 1/32 inch.
    d. Between Door Face and Stop: 1/16 inch to 1/8 inch plus or minus 1/32 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3.4 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.

B. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION

11/07/18

SECTION 08 41 13 (ADDENDUM 3)

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior storefront framing, and operable project-out vents.
2. Interior storefront framing, and fixed window framing.
3. Exterior manual-swing entrance doors and door-frame units.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Document 00 01 08 “Deferred Approval Items.”
2. Section 05 40 00 “Cold-formed Metal Framing.”
3. Section 07 42 13.19 “Insulated Metal Spandrel Panels.”
4. Section 07 92 00 “Joint Sealants.”
5. Section 08 71 00 “Door Hardware.”
6. Section 08 80 00 “Glazing”.
7. Section 09 22 16 “Non-Structural Metal Framing.”

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

Aluminum Association (AA)
ASTM International (ASTM)
Architectural Aluminum Manufacturers Association (AAMA)
The Society for Protective Coatings (SSPC)

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

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

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Include full-size isometric details of each vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

a. Joinery, including concealed welds.

b. Anchorage.
c. Expansion provisions.
d. Glazing.
e. Flashing and drainage.

3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.

C. Structural Calculations: Along with the shop drawings, submit structural calculations prepared, signed and sealed by a structural engineer registered in California. Calculations shall show that storefront framing and anchorage will withstand the wind, dead, seismic, and other loads specified herein. Design members in accordance with 2016 CBC Chapters 20 and 22A with allowable stresses not to exceed yield stresses stated therein. Show section property computations for all framing members.

D. Fabrication Sample: Of typical vertical-to-horizontal intersection of aluminum-framed systems, made from 12" lengths of full-size components and showing details of the following:

1. Joinery, including concealed welds.
2. Anchorage.
3. Expansion provisions.
4. Glazing.
5. Flashing and drainage.

E. Installation Instructions: Provide complete diagrams, templates, and installation instructions as required for the installation of the storefront system, in sufficient time so that backing, framing, and formwork can be properly installed, and so that the work of other trades will not be delayed.

F. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

G. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 DIVISION OF STATE ARCHITECT DEFERRED APPROVAL

A. Deferred approval required for all storefront window units with spans greater than 10 feet.

B. After Architect has reviewed the shop drawings and materials prepared and provided by Contractor for the Deferred Approval item, Architect will forward those materials to Division of the State Architect (DSA) for their review and comment.

C. Contractor shall make all DSA required corrections, shall provide all DSA required documentation, and shall coordinate and resubmit those materials to Architect for forwarding to DSA.

D. If a second round of corrections and resubmittals is required by DSA, Contractor shall be responsible for all time and coordination with DSA, without further involvement by Architect, or Contractor shall compensate Architect for their time if Contractor chooses to continue to involve Architect in the process with DSA.

E. When Contractor has obtained DSA approval of the Deferred Approval materials, Contractor shall resubmit a copy of those same DSA approved materials to Architect for Record.

F. No work shall commence on a Deferred Approval item until all these requirements have been completed.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Energy Performance Certificates: For exterior aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.

1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.

C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An installer which has had successful experience with installation of the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications: A manufacturer capable of providing aluminum framed storefront system that meet or exceed performance requirements indicated and of documenting this performance by inclusion of test reports, and calculations.

C. Source Limitations: Obtain aluminum framed storefront system through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum framed storefront system and are based on the specific system indicated. Do not modify size and dimensional requirements.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. 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 for type(s) of storefront elevation(s) as directed by Architect.

2. Notify Architect seven days in advance of dates and times when mockups will be constructed.

3. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed during the construction at Project.

4. Demonstrate the proposed range of aesthetic effects and workmanship.

5. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
   a. Allow seven days for initial review and each re-review of each mockup.

6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.

F. Accessible Entrances: Comply with Accessibility requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum entrance and storefront components in the manufacturer's original protective packaging with identification labels intact.

B. Store entrance and storefront sections out of contact with the ground and under a weather tight covering. Do not cover storefront and entrance sections with polyethylene film or similar coverings that will create a humidity chamber. If factory coated aluminum is protected with a strippable plastic film, remove the film before exposing the materials to direct sunlight.

C. Protect factory-coated surfaces during shipping and handling to prevent scratching, gouging or other damage to the finish.

1.9 FIELD MEASUREMENTS

A. Secure accurate field measurements required for the manufacture and installation of aluminum entrance and storefront work. Consult with the various trades whose work adjoins this work and be responsible for all measurements and the working out of all details.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating aluminum-framed systems without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.10 WARRANTY

A. Provide an extended warranty under the provisions of Section 01 78 36.

B. Special Assembly Warranty: Manufacturer standard form in which manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.

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

   a. Structural failures including, but not limited to, excessive deflection.
   b. Noise or vibration created by wind and thermal and structural movements.
   c. Deterioration of metals and other materials beyond normal weathering.
   d. Water penetration through fixed glazing and framing areas.
   e. Failure of operating components to function properly.

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

C. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.

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

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain all components of exterior and interior aluminum-framed entrance and storefront systems, including framing, venting windows, and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS – EXTERIOR STOREFRONT

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

B. Wind loads: Provide storefront system; include anchorage, capable of withstanding wind load design pressures of (S.S.D.) lbs./sq. ft. inward and (S.S.D.) lbs./sq. ft. outward. The design pressures are based on the 2016 California Building Code. Wind Loads: As indicated on Structural Drawings.

C. Air Leakage: The test specimen shall be tested in accordance with ASTM E 283. Air Leakage rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 6.2 psf with interior seal, or, rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 1.6 psf without interior seal. CSA A440 Fixed Rating.

D. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 10 psf as defined in AAMA 501. CSA A440 B5 Rating.

E. Deflection of Framing Members Under Uniform Load: A static air design load of 30 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur. CSA A440 C2 Rating.

NOTE: THERMAL TRANSMITTANCE AND CONDENSATION RESISTANCE PERFORMANCE RESULTS BELOW ARE BASED UPON 1" CLEAR INSULATING GLASS (1/4" CLEAR WITH e= 0.035 LOW E COATING ON #2 SURFACE, 1/2" AIR SPACE WITH WARM EDGE SPACER AND 90% ARGON GAS FILL, 1/4" CLEAR).

F. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:

Trifab™ 601T: 0.35 (low-e) BTU/hr/ft^2/°F. As determined per AAMA 507 or NFRC 100.

G. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:

Trifab™ 601T – 69_{frame} and 70_{glass} (low-e).

H. Condensation Resistance (I): When tested to CSA A-440.2, the condensation index shall not be less than:

63_{frame} and 68_{glass} (low-e).

2.3 PERFORMANCE REQUIREMENTS – INTERIOR STOREFRONT

A. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.

1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
2. Failure also includes the following:

    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Noise or vibration created by wind and thermal and structural movements.
    d. Loosening or weakening of fasteners, attachments, and other components.
    e. Failure of operating units.

B. Wind loads: Provide storefront system; include anchorage, capable of withstanding wind load design pressures of (S.S.D.) lbs./sq. ft. inward and (S.S.D.) lbs./sq. ft. outward. The design pressures are based on the 2016 California Building Code.

C. Air Leakage: The test specimen shall be tested in accordance with ASTM E 283. Air Leakage rate shall not exceed 0.06 cfm/ft2 at a static air pressure differential of 6.2 psf with interior seal, or, rate shall not exceed 0.06 cfm/ft^2 at a static air pressure differential of 1.6 psf without interior seal. CSA A440 Fixed Rating.

D. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501.

E. Defection of Framing Members Under Uniform Load: A static air design load of 35 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

F. Seismic: When tested to AAMA 501.4, system must meet design displacement of 0.010 x the story height and ultimate displacement of 1.5 x the design displacement.

G. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures:

1. Temperature Change (Range): 0 deg F; 180 deg F.
2. Test Interior Ambient-Air Temperature: (75 deg F .
3. Test Performance: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5 for a minimum 3 cycles.

NOTE: THERMAL TRANSMITTANCE AND CONDENSATION RESISTANCE PERFORMANCE RESULTS BELOW ARE BASED UPON 1" CLEAR INSULATING GLASS (1/4" CLEAR WITH e= 0.035 LOW E COATING ON #2 SURFACE, 1/2" AS WITH WARM EDGE SPACER AND 90% ARGON GAS FILL, 1/4" CLEAR).

H. Energy Efficiency:

1. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
   a. Glass to Exterior: 0.61 (clear) BTU/hr/ft^2/°F.
   b. Glass to Center: 0.61 (clear) BTU/hr/ft^2/°F.
   c. Glass to Interior: 0.56 (clear) BTU/hr/ft^2/°F.

I. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:

1. Glass to Exterior: 69_{frame} and 58_{glass} (clear).
2. Glass to Center: 63_{frame} and 56_{glass} (clear).
3. Glass to Interior: 54_{frame} and 58_{glass} (clear).

NOTE: SOUND TRANSMISSION CLASS (STC) AND OUTDOOR-INDOOR TRANSMISSION CLASS (OITC) TEST RESULTS BELOW ARE BASED UPON 1" CLEAR DOUBLE LAMINATED INSULATING GLASS WITH PVB INTERLAYER (1/8", .030", 1/8", 1/2" AS, 1/8", .030", 1/8").

J. Sound Transmission Class (STC) and Outdoor-Indoor Transmission Class (OITC): When tested to AAMA Specification 1801 and in accordance with ASTM E1425 and ASTM E90, the STC and OITC Rating shall not be less than:

1. Glass to Exterior: 38 (STC) and 31 (OITC).
2. Glass to Center: 37 (STC) and 30 (OITC).
3. Glass to Interior: 38 (STC) and 30 (OITC).

2.4 PERFORMANCE REQUIREMENTS – EXTERIOR ENTRANCE DOORS

A. Wind loads: Provide aluminum-framed entrance system; include anchorage, capable of withstanding wind load design pressures as indicated on Structural Drawings.

B. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf for single doors and pairs of doors. A single 3'-0" x 7'-0" entrance door and frame shall not exceed 1.0 cfm/ft^2. A pair of 6'-0" x 7'-0" entrance doors and frame shall not exceed 1.0 cfm/ft^2.

C. Structural Performance: Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity. Testing procedure and certified test results available upon request.

2.5 PERFORMANCE REQUIREMENTS – PROJECT OUT VENTS

A. General Performance: Aluminum-framed window system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Window Performance Requirements:

1. Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
   a. Performance Class and Grade: (P-HC40 – P-HC70) Project-Out Window
2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E283 at a minimum size of 60" x 36" Project-Out. Air infiltration rate shall not exceed 0.10 cfm/ft^2 at a static air pressure differential of 6.24 psf.
3. Water Resistance: The test specimen shall be tested in accordance with ASTM E547 and ASTM E331 at a minimum size of 60" x 36" Project-Out. There shall be no leakage as defined in the test method at a static air pressure differential of 15 psf.
4. Uniform Load Deflection: A minimum static air pressure difference of (40 psf (2 Locks)) or (70 psf (3 Locks)) shall be applied in the positive and negative direction in accordance with ASTM E330. There shall be no deflection in excess of L/175 of the span of any framing member.
5. Uniform Load Structural: A minimum static air pressure difference of (60 psf (2 Locks)) or (105 psf (3 Locks)) shall be applied in the positive and negative direction in accordance with ASTM E330. The unit shall be evaluated after each load with permanent set not to exceed 0.2% of span length.
6. Component Testing: Window components shall be tested in accordance with procedures described in AAMA/WDMA/CSA 101/I.S.2/A440 and AAMA 910.

   NOTE; THERMAL TRANSMITTANCE AND CONDENSATION RESISTANCE TEST RESULTS NOTED ARE BASED UPON 1" CLEAR INSULATING GLASS. (1/8" + 3/4" AS +1/8")

7. Thermal Transmittance (U-Factor): When tested to AAMA Specification 1503, the thermal transmittance (U-Factor) shall not be more than;
   a. Project-Out Windows: 0.68 BTU/hr/ft^2/°F. (NFRC – 0.62).

8. Condensation Resistance Test (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, the condensation resistance factor (CFR) shall not be less than; Frame 51, Glass 54.
9. Thermal Transmittance Test: (U-Factor): The conductive thermal transmittance (U-Factor) shall not be more than (____) BTU/hr/sf/°F per AAMA 507 or NFRC 100 when using project specified glass.
10. Temperature Index (I): Provide aluminum windows tested for thermal performance according to CSA-A440 with a Temperature Index (I) not less than: 47.7.
11. Forced Entry Resistance: All windows shall conform to ASTM F588, Grade 10.
12. Windborne-Debris-Impact-Resistance Performance: Shall be tested in accordance with ASTM E 1886 and information in ASTM E 1996 and TAS 201/203.
    a. Large - Missile Impact: For aluminum-framed systems located within 30 feet of grade.
    b. Small - Missile Impact: For aluminum-framed systems located within 30 feet above grade.

2.6 MANUFACTURERS

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

Kawneer Company Inc.; www.kawneer.com (Basis of Design)
Arcadia, Inc.; www.arcadiainc.com

U.S. Aluminum Corp.; www.usalum.com
Old Castle Building Envelope; www.oldcastlebe.com
Substitutions: Section 01 25 13 – Product Options and Substitutions.

B. Basis-of-Design Product for Exterior Storefront System:

1. Kawneer Company Inc.
2. Series: Trifab™ 601T (Thermal) Storefront System.
3. System Dimensions: Nominal 2” x 6”.
4. Glass: Exterior glazed.
5. Framing Fabrication: Screw Spline Fabrication.

C. Basis-of-Design Product for Interior Storefront System:

1. Kawneer Company Inc.
2. Series: Trifab™ VG 451 (Non-Thermal) Storefront System.
3. System Dimensions: Nominal 2” x 4-1/2”.
4. Glass: Center glazed.
5. Framing Fabrication: Screw Spline; Shear Block; or Stick Fabrication.

2.7 MATERIALS

A. Aluminum Extrusions: Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.070" wall thickness at any location for the main frame and complying with ASTM B 221: 6063-T6 alloy and temper.

1. Extruded Aluminum: 6063-T6 alloy or other alloy standard with the manufacturer having equivalent structural and corrosion resistance properties and as recommended by the manufacturer for required finish meeting the requirements of ASTM B221; not less than 0.070-inch wall thickness at any location for the main frame.
2. Sheet Aluminum: 5055 aluminum alloy meeting the requirements of ASTM B209.
3. Provide exposed materials free from defects and other surface blemishes.

B. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum framing members, trim hardware, anchors, and other components.

C. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

D. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

E. Sealant: As specified in Section 07 92 00. For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

F. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

F. Steel Reinforcing: Provide vertical and horizontal steel reinforcing sized as required for members and based on structural calculations and design analyses for imposed dead loads and wind load.

G. Door Stops: Door frames for doors hung on hinges or offset pivots shall have snap-in type door stops with pile weatherstripping at head and jambs.

H. Tolerances: References to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.8 STOREFRONT FRAMING SYSTEMS

A. Exterior Storefront System Thermal Barrier (Trifab™ 601T):

1. Trifab™ 601T: Kawneer IsoLock™ Thermal Break with a nominal 1/4" separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.

B. Brackets and Reinforcements: Manufacturer’s standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

C. Fasteners and Accessories: Manufacturer’s standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials. Where exposed, shall be stainless steel.

D. Perimeter Anchors: When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.9 ENTRANCE DOOR SYSTEMS

A. Manufacturers: Acceptable products or equal:

1. Basis-of-Design Product: Kawneer Co., Inc.; TuffLine™ Series 500
   Arcadia Inc.
   U.S. Aluminum Corp.
   Oldcastle Building Envelope™

B. Design: Manufacturer's standard heavy-duty wide stile doors where scheduled, except provide width dimensions for rails and stiles as noted. The major portions of each extrusion shall be not less than 0.188-inch thick unless otherwise indicated or specified. Glass stops shall be not less than 0.050-inch thick.

1. Bottom Rail: 10”.
2. Top Rail: 6”.
3. Middle Rail: 6”.
4. Vertical Stiles: 6”.
5. Depth: 1-3/4”.

C. Construction: Corner construction shall consist of both heavy reinforcement blocks or brackets secured with bolts or screws and SIGMA deep penetration welds. Furnish each door leaf with an adjustable mechanism allowing for minor field adjustments both vertically and front to back.

D. Glazing Stops: Provide snap-in type interior stops and lock in tamper proof type exterior stops with no exposed screws required to secure stops. Provide stops with vinyl, neoprene or EPDM bulb type glazing gaskets.

E. Weatherstripping: Provide pile weatherstripping on both stiles of center pivoted doors and on meeting stiles of offset pivoted doors.

2.10 ENTRANCE DOOR HARDWARE

A. Finish hardware is specified in Section 08 71 00. Coordinate with hardware supplier to obtain factory installed hardware and templates for field-installed hardware. Provide stainless or galvanized steel reinforcing for hardware items to be secured to aluminum framing in the field.

2.11 PROJECT-OUT WINDOWS

A. Basis-of-Design Product: Kawneer GLASSvent™ Windows.

1. 2-13/16” system depth (with 1” infill glazing).
2. Performance Grade: P-HC40 with 1” Glass and 2 Cam Locks.

B. Materials:

1. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" wall thickness at any location for the main frame and sash members.
2. Thermal Barrier: The thermal barrier shall be Kawneer consisting of low conductive polymer full depth of infill.
3. Fasteners: Nonmagnetic stainless steel or other materials to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.
4. Anchors: Nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.
5. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.

C. Hardware:

1. Stainless Steel 4-Bar Hinges.
2. Cast White Bronze Cam Locking Handles.

D. Fabrication:

1. Window Vent and/or Vent Frame Joinery: Mitered and Mechanically clipped and/or staked. Factory sealed vent and /or vent frame and corner joints.
2. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

2.12 GLAZING

A. Glass and Glazing Materials: Comply with the requirements of Section 08 80 00.

B. Glazing Gaskets: Manufacturer's standard compression types; replaceable, extruded EPDM rubber.

C. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.

D. Bond-Breaker Tape: Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

E. Glazing System for Project-Out windows: Glazing method shall be four-sided structural silicone glazed in accordance with manufacturer's standards.

2.13 ACCESSORIES

A. Joint Sealants: For installation at perimeter of aluminum-framed systems, as specified in Section 07 92 00 "Joint Sealants".

B. Concealed Flashing: 0.0179-inch (26-gage) minimum dead soft stainless steel, or 0.040-inch minimum aluminum sheet of alloy and type selected by manufacturer for compatibility with other components.

C. Bituminous Coatings: Cold applied asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos; formulated for 30-mil thickness per coat.

2.14 FABRICATION

A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fit joints; make joints flush, hairline and weatherproof.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

B. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.

C. Storefront Framing: Fabricate components for assembly using manufacturer's standard installation instructions.

D. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.

E. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

2.15 ALUMINUM FINISH

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Factory Finishing:

1. Kawneer Permanodic™ AA-M10C21A41 / AA-M45C22A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear).

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weather tight framed aluminum-storefront system installation.

1. Concrete and Masonry Surfaces: Visibly dry and free of excess mortar, sand, and other construction debris.
2. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure non-movement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

C. Set continuous sill members and flashing in full sealant bed as specified in Section 07 92 00 "Joint Sealants" to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Section 08 80 00 "Glazing."

G. Install weatherseal sealant according to Section 07 92 00 "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

H. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible

3.3 ERECTION TOLERANCES

A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet.
2. Level: 1/8 inch in 20 feet.
3. Alignment:
   a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
   b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
   c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

1. Testing: Testing shall be performed by a qualified independent testing agency. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.

   a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft^2, whichever is greater.
   b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.

C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.

D. Manufacturer's Field Services: Upon Architect’s or Owner’s written request, provide periodic site visit by manufacturer’s field service representative.

3.5 CLEANING

A. Clean aluminum work before acceptance, removing blemishes, finger marks, oxidation, and leave in first-class condition. Use cleaning compounds approved by the aluminum framing manufacturer.

B. Clean glass immediately after installation. Comply with glass manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

C. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.6 ADJUSTING

A. Entrances: Adjust operating hardware for smooth operation according to hardware manufacturers' written instructions.

1. For doors accessible to people with disabilities, adjust closers to provide a 3-second closer sweep period for doors to move from a 70-degree open position to 3 inches from the latch measured to the leading door edge.

3.7 PROTECTION

A. After installation, protect exposed portions of the aluminum entrance work from damage by grinding and polishing compounds, plaster, lime, acids, cement or other contaminants.

END OF SECTION

12/06/18

SECTION 08 71 00 (ADDENDUM 3)

DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following, but is not necessarily limited to:

1. Door Hardware, including electric hardware.
2. Storefront and Entrance door hardware.
3. Low-energy door operators plus sensors and actuators.
4. Thresholds, gasketing and weather-stripping.
5. Door silencers or mutes.

C. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.

1. Section 08 11 13 - Hollow Metal Doors and Frames.
2. Section 08 14 16 - Flush Wood Doors.
3. Section 08 41 13 – Aluminum-Framed Entrances and Storefront.
4. Division 28: Section - Fire/Life-Safety Systems & Security Access Systems.

1.03 REFERENCES (USE DATE OF STANDARD IN EFFECT AS OF BID DATE.)

A. 2016 California Building Code, CCR, Title 24.

B. BHMA – Builders' Hardware Manufacturers Association

C. DHI – Door and Hardware Institute

D. NFPA - National Fire Protection Association.

1. NFPA 80 - Fire Doors and Other Opening Protectives
2. NFPA 105 - Smoke and Draft Control Door Assemblies

E. UL - Underwriters Laboratories.

1. UL 10C - Fire Tests of Door Assemblies
2. UL 305 - Panic Hardware

F. WHI - Warnock Hersey Incorporated

G. SDI - Steel Door Institute

1.04 COORDINATION

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

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

1.05 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.

B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key District Personnel, and Project Inspector.

C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review District's keying standards.

1.06 SUBMITTALS AND SUBSTITUTIONS

A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit six (6) copies of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with;
    a. Job Name, location, telephone number.
    b. Architects name, location and telephone number.
    c. Contractors name, location, telephone number and job number.
    d. Suppliers name, location, telephone number and job number.
    e. Hardware consultant's name, location and telephone number.

2. Job Index information included;
    a. Numerical door number index including; door number, hardware heading number and page number.
    b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
    c. Manufacturers' names and abbreviations for all materials.
    d. Explanation of abbreviations, symbols, and codes used in the schedule.
    e. Mounting locations for hardware.
    f. Clarification statements or questions.
    g. Catalog cuts and manufacturer’s technical data and instructions.

3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)						
			(a) 1 Single Door #1 - Exterior from Corridor 101		(b) 90°	(c) RH
			(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM			
(g) 1	(h)	(i) ea	(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS		(m) 626	(n) IVE
2	6AA	1 ea	Lockset - ND50PD x RHO x RH x 10-025 x JTMS		626	SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

E. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

F. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.07 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals.

B. Schedules: Final door hardware and keying schedule.

C. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.

D. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.08 MAINTENANCE MATERIAL SUBMITTALS

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.

1.09 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for

supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Responsible for detailing, scheduling and ordering of finish hardware.
2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing.
3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

1.10 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.11 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:

1. Locksets: Ten (10) years.
2. Closers: Thirty (30) years.
3. Exit devices: Three (3) years.
4. All other hardware: Two (2) years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes
Hinges	Ives	Hager, Stanley, McKinney
Locks, Latches & Cylinders	Schlage	Or Approved Equal
Exit Devices	Von Duprin	Or Approved Equal
Closers	LCN	Or Approved Equal
Push, Pulls & Protection Plates	Ives	Trimco, BBW, DCI
Flush Bolts	Ives	Trimco, BBW, DCI
Dust Proof Strikes	Ives	Trimco, BBW, DCI
Coordinators	Ives	Trimco, BBW, DCI
Stops	Ives	Trimco, BBW, DCI
Overhead Stops	Glynn-Johnson	Or Approved Equal
Thresholds	Zero	Pemko, National Guard
Seals & Bottoms	Zero	Pemko, National Guard

2.02 MATERIALS

A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.

1. Hinges shall be sized in accordance with the following:
   a. Height:
      1) Doors up to 42" wide: 4-1/2" inches.
      2) Doors 43" to 48" wide: 5 inches.
   b. Width: Sufficient to clear frame and trim when door swings 180 degrees.
   c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.

2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

B. Continuous Hinges: As manufactured by Ives, an Allegion Company. UL rated as required.

C. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Rhodes" design, fastened with through-bolts and threaded chassis hubs.

1. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
   a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access.
   b. Offset lever pull – minimum 1,600 foot pounds without gaining access.
   c. Vertical lever impact – minimum 100 impacts without gaining access.

2. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers.
3. UL 10C for 4'-0" x 10'-0" 3-hour fire door.
4. Cylinders: Refer to "KEYING" article, herein.
5. Provide solid steel anti-rotation through bolts and posts to control excessive rotation of lever.
6. Provide lockset that allows lock function to be changed to over twenty other common functions by swapping easily accessible parts.
7. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw capable of UL listing of 3 hours on a 4' x 10' opening. Provide proper latch throw for UL listing at pairs.
8. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
9. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
10. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
11. Provide wired electrified options as scheduled in the hardware sets.
    a. 12 through 24 volt DC operating capability, auto-detecting
    b. Selectable EL (fail safe)/EU (fail secure) operating mode via switch on chassis
    c. 0.230A (230mA) maximum current draw.
    d. 0.010A (10mA) holding current.
    e. Modular / "plug in" request to exit switch.

12. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.

D. Exit devices: Von Duprin as scheduled.

1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.
2. All internal parts shall be of cold-rolled steel with zinc dichromate coating.
3. Mechanism case shall have an average thickness of 0.140".
4. Compression spring engineering.
5. Non-handed basic device design with center case interchangeable with all functions.
6. All devices shall have quiet return fluid dampeners.
7. All latchbolts shall be deadlocking with ¾" throw and have a self-lubricating coating to reduce friction and wear.
8. Device shall bear UL label for fire and or panic as may be required.
9. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
10. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key.
11. Furnish glass bead kits for vision lites where required.
12. All Exit Devices to be sex-bolted to the doors.
13. Panic Hardware shall comply with CBC Section 11B.404.2.7 and shall be mounted between 34" and 44" above the finished floor surface.
    a. Provide exit devices UL certified to meet maximum 5 pound requirements according to the California Building Code section 11B-309.4, and UL listed for Panic Exterior Fire Exit Hardware.

E. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.

1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.
2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.

3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16” steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.
5. Closers shall be installed to permit doors to swing 180 degrees.
6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.
7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

F. Flush Bolts and Dust Proof Strikes: Automatic Flush Bolts shall be of the low operating force design. Utilize the top bolt only model for interior doors where applicable and as permitted by testing procedures.

1. Manual flush bolts only permitted on storage or mechanical openings as scheduled.
2. Provide dust proof strikes at openings using bottom bolts.

G. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Door stops may protrude 4” maximum from face of the wall or be mounted a minimum of 78” A.F.F. (CBC Section 11B-307.4 Vertical Clearance.)
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

H. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

I. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 “Thermal and Moisture Protection”.
3. Use 1/4” diameter fasteners, red-head flat-head sleeve anchors (SS/FHSL).
4. Thresholds shall comply with CBC Section 11B-404.2.5.

J. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.
2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
3. Smoke and Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on “S” labeled Positive Pressure door assemblies.

K. Door Shoes and Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

L. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.03 KEYING

A. Furnish a Schlage Primus IC Core masterkey system as directed by the Owner or Architect.

B. A detailed keying schedule is to be prepared by the owner and/or architect in consultation with a representative of the lock manufacturer. Each keyed cylinder on every keyed lock is to be listed separately showing the door #, key group (in BHMA terminology), cylinder type, finish and location on the door.

C. Establish a new masterkey system for this project as directed by the keying schedule.

D. Furnish all cylinders with Schlage Full Size Interchangeable Core (FSIC). Pack change keys independently (PKI).

E. Furnish construction keying for all doors with temporary IC Cores.

F. Furnish mechanical keys as follows:

1. Furnish 2 cut change keys for each different change key code.
2. Furnish 1 uncut key blank for each change key code.
3. Furnish 6 cut masterkeys for each different masterkey set.
4. Furnish 3 uncut key blanks for each masterkey set.
5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
6. Furnish 1 cut control key cut to each SKD combination.

G. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.

2.04 FINISHES

A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.

B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.

C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.05 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2013 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.

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

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

3.03 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.

E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.04 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.05 FIELD QUALITY CONTROL

A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.06 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust Proof Strikes, Kick Plates, Door Stops & Silencers
LCN	=	LCN	Door Closers
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
VON	=	Von Duprin	Exit Devices
ZER	=	Zero International	Thresholds, Gasketing & Weather-stripping

SPEXTRA: 413400

HARDWARE GROUP NO. 01

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	PANIC HARDWARE	CD-PA-AX-98-EO	626	VON
1	EA	PANIC HARDWARE	CD-PA-AX-98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
4	EA	PRIMUS CORE	20-740	626	SCH
1	EA	MORTISE CYLINDER	26-091 ICX	626	SCH
2	EA	MORTISE CYLINDER	26-091 ICX XQ11-948	626	SCH
2	EA	90 DEG OFFSET PULL	8190HD 12" L	630	IVE
2	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
2	EA	FLOOR STOP	FS18L	BLK	IVE
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

WEATHER-STRIPPING FURNISHED WITH DOOR & FRAME ASSEMBLY

HARDWARE GROUP NO. 02

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	CD-PA-AX-98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	MORTISE CYLINDER	26-091 ICX XQ11-948	626	SCH
1	EA	DOOR PULL	VR910 NL	630	IVE
1	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

HARDWARE GROUP NO. 02A

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	PANIC HARDWARE	CD-PA-AX-98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	MORTISE CYLINDER	26-091 ICX XQ11-948	626	SCH
1	EA	90 DEG OFFSET PULL	8190HD 12" L	630	IVE
1	EA	OH STOP	100S (ONLY FOR DOOR E13B)	630	GLY
1	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
1	EA	FLOOR STOP	FS18L (ONLY FOR DOOR E13C)	BLK	IVE
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

WEATHER-STRIPPING FURNISHED WITH DOOR & FRAME ASSEMBLY

HARDWARE GROUP NO. 03

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	VANDL CLASSROOM SEC	ND95TD RHO XN12-035	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

WEATHER-STRIPPING FURNISHED WITH DOOR & FRAME ASSEMBLY

HARDWARE GROUP NO. 04

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	PANIC HARDWARE	LD-PA-AX-98-L-2SI-06	626	VON
2	EA	RIM CYLINDER	20-057 ICX	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO. 05

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	628	IVE
1	EA	REMOVABLE MULLION	KR4954 STAB	689	VON
1	EA	PANIC HARDWARE	LD-PA-AX-98-EO	626	VON
1	EA	PANIC HARDWARE	LD-PA-AX-98-L-2SI-06	626	VON
2	EA	RIM CYLINDER	20-057 ICX	626	SCH
3	EA	PRIMUS CORE	20-740	626	SCH
1	EA	MORTISE CYLINDER	26-091 ICX	626	SCH
2	EA	SURFACE CLOSER	4111 AVB EDA	689	LCN
2	EA	FLOOR STOP	FS441	613	IVE

HARDWARE GROUP NO. 06

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR
		RE-USE EXISTING DOORS, FRAMES, & HARDWARE		

HARDWARE GROUP NO. 07

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112HD	628	IVE
1	EA	CLASSROOM SECURITY	ND75TD RHO XN12-035	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	FLOOR STOP	FS439	682	IVE

GASKETING FURNISHED WITH ALUMINUM FRAME ASSEMBLY

HARDWARE GROUP NO. 08

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ND50TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4011	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE

GASKETING FURNISHED WITH ALUMINUM FRAME ASSEMBLY

HARDWARE GROUP NO. 09

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE

GASKETING FURNISHED WITH ALUMINUM FRAME ASSEMBLY

HARDWARE GROUP NO. 10

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM SECURITY	ND75TD RHO XN12-035	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP	FS439	682	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR BOTTOM	360AA	AA	ZER

HARDWARE GROUP NO. 11

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	ND70TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	GASKETING	312A-S	A	ZER
1	EA	DOOR BOTTOM	350A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER

HARDWARE GROUP NO. 12

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	STOREROOM LOCK	ND80TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	GASKETING	312A-S	A	ZER
			RE-USE BALANCE OF DOOR, FRAME & HARDWARE		

HARDWARE GROUP NO. 13

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	ND80TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	FLOOR STOP/HOLDER	FS41	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

HARDWARE GROUP NO. 14

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	FIRE EXIT HARDWARE	PA-AX-98-L-F-2SI-06	626	VON
2	EA	RIM CYLINDER	20-057 ICX	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
			RE-USE BALANCE OF DOOR, FRAME & HARDWARE		

HARDWARE GROUP NO. 15

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	STOREROOM LOCK	ND80TD RHO	626	SCH
1	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4011	689	LCN
			RE-USE BALANCE OF DOOR, FRAME & HARDWARE		

HARDWARE GROUP NO. 16

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CLASSROOM SECURITY	ND75TD RHO XN12-035	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	SURFACE CLOSER	4111 EDA	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
			RE-USE BALANCE OF DOOR, FRAME & HARDWARE		

HARDWARE GROUP NO. 17

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY TWP CON	628	IVE
1	EA	ELEC PANIC HARDWARE	EL-PA-AX-98-NL-OP-110MD	626	VON
1	EA	RIM CYLINDER	20-057 ICX	626	SCH
2	EA	PRIMUS CORE	20-740	626	SCH
1	EA	MORTISE CYLINDER	26-091 ICX	626	SCH
1	EA	90 DEG OFFSET PULL	8190HD 12" L	630	IVE
1	EA	SURF. AUTO OPERATOR	9542 MS	ANCLR	LCN
2	EA	ACTUATOR	8310-836T	630	LCN
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL	A	ZER
1	EA	KEY SWITCH	653-1414 L2	630	SCE
1	EA	POWER SUPPLY	PS914 900-2RS		VON

KEY SWITCH DEACTIVATES OUTSIDE ACTUATOR FOR AFTER HOUR NON OPERATION

END OF SECTION

12/05/18

SECTION 08 88 13 (ADDENDUM 3)

FIRE-RESISTANT GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Fire-resistance-rated glazing.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related sections:

1. Section 08 80 00 “Glazing.”
2. Section 08 11 13 “Hollow Metal Doors and Frames.”

1.02 REFERENCES

A. ASTM International:

1. ASTM C1036 - Standard Specification for Flat Glass.
2. ASTM C1629 – Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
3. ASTM D4977 – Standard Test Method for Granule Adhesion to Mineral Surfaced Roofing by Abrasion.
4. ASTM E695 - Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading.
5. ASTM E119 - Methods for Fire Tests of Building Construction and Materials.
6. ASTM E152 - Methods for Fire Tests of Door Assemblies.
7. ASTM E163 - Methods for Fire Tests of Window Assemblies.
8. ASTM E2074 - Standard Test Method for Fire Tests of Door Assemblies, including Positive Pressure Testing of Side-hinged and Pivoted Swinging Door Assemblies.
9. ASTM E2010-1 - Standard Test for Positive Pressure of Fire Tests of Window Assemblies.

B. National Fire Protection Association (NFPA):

1. NFPA 80 - Fire Doors and Windows.
2. NFPA 251 - Fire Tests of Building Construction and Materials.
3. NFPA 252 - Fire Tests of Door Assemblies.
4. NFPA 257 - Fire Tests of Window Assemblies.

C. Underwrites Laboratories, Inc. (UL):

1. UL 9 - Standard for Safety of Fire Tests of Window Assemblies.
2. UL 10 B - Standard for Safety of Fire Tests of Door Assemblies.
3. UL 10 C - Standard of Safety of Positive Pressure Tests of Door Assemblies.
4. UL 263 - Fire Tests of Building Construction and Materials.

D. Consumer Product Safety Commission (CPSC):

1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

E. Glass Association of North America (GANA):

1. GANA - Glazing Manual.
2. FGMA - Sealant Manual.

F. California Building Code, 2016 Edition.

1.03 DEFINITIONS

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

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C1036.

1.04 COORDINATION

A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product.

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

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

1.06 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of glass and glazing product, from manufacturer.

B. Sample Warranties: For special warranties.

1.07 QUALITY ASSURANCE

A. Listings and Labels:

1. Fire rated glazing shall be under current follow-up services by a nationally recognized independent testing laboratory approved by OSHA and maintain a current listing or certification. Assemblies shall be labeled in accordance with limits of listings.

1.08 DELIVERY, STORAGE AND HANDLING

A. General: Comply with Section 01 66 00 “Product Delivery, Storage and Handling.”

B. Ordering: Comply with manufacturer’s ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials to specified destinations in manufacturer or distributor’s packaging.

D. Storage and Protection: Store off ground, under cover, protected from weather and construction activities and at temperature conditions recommended by manufacturer.

1.09 FIELD CONDITIONS

A. Field Measurements: Verify actual measurements for openings by field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

1.10 WARRANTY

A. Project Warranty: Refer to Section 01 78 36 for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document. Manufacturer's warranty is not intended to limit other rights that the Owner may have under the Contract Documents.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

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

B. Provide a fire rated glazing manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage, or failure.

1. Fire Rating: 90 minutes with hose stream.
2. Fire resistive, safety rated glazing tested in accordance with ASTM E119, NFPA 80, NFPA 251, NFPA 252, NFPA 257, UL 9, UL 10B, UL 10C and UL 263.
3. Testing Laboratory: Fire tests shall be conducted by a nationally recognized independent testing laboratory.

2.02 FIRE-RESISTANCE-RATED GLAZING

A. Basis-of-Design Manufacturer: SuperLite™ II-XL as manufactured and distributed by SAFTI *FIRST*.

1. Contact: 100 N Hill Drive, Suite 12, Brisbane, CA 94005; Telephone 888-653-3333; Fax 888-653-4444; email info@safti.com; Web site www.safti.com
2. Fire rated glass and framing must be provided by a single-source, US manufacturer. Distributors of fire rated glass and framing are not to be considered as manufacturers.
3. Substitutions: Section 01 25 13 "Product Options and Substitutions."

B. Basis-of-Design Product: SuperLite™ II-XL 90 minute fire resistive glazing with hose stream.

C. Design Requirements:

1. Make-up: Comprised of an inboard and outboard lite of clear tempered glass protecting a clear, fire resistive, intumescent interlayer.
2. Thickness: 1-1/2" standard profile.
3. Weight: 12 lbs./sq. ft. in 1-1/2" standard profile.
4. Dimensions: Must meet max. clear view area of 4.,876 sq. in., measuring at least 124 in. on the long side.
5. Visible Light Transmission: 0.853 with clear tempered.
6. U-Factor: 0.80 standard.
7. Sound Transmission Class: Must provide a minimum of STC 44 Rating in 1-1/2" standard profile.
8. Outdoor/Indoor Transmission Class: Must provide minimum OITC 40 rating in 1-1/2" standard profile.
9. Appearance: Tint-free, optically clear fire rated glazing.
10. Fire Rating: Fire rated to 90 minutes with hose stream and meet ASTM E-119.
11. Impact Safety Resistance: CPSC 16 CFR 1201 Cat. I & II.
12. Hard Body Impact Classification: Must meet ASTM C1629/C1629M Level 3.
13. Soft Body Impact Classification: Must meet ASTM E695 Level 3.
14. Surface Abrasion Resistance: Must meet ASTM D4977 Level 3.

D. Fire-Resistance-Rated Glazing Labeling:

1. Each piece of fire-rated glazing material shall be labeled with a permanent logo including name of product, manufacturer, testing laboratory, fire rating period and safety glazing standards.
2. Glazing materials installed in Hazardous Locations, subject to human impact, shall be certified and permanently labeled as meeting applicable requirements reference in NFPA 80:
   a. CPSC 16 CFR 1201 Cat. I & II.

2.03 GLAZING ACCESSORIES

A. Glazing Accessories: Manufacturer recommended fire rated glazing accessory as follows:

1. Glazing with EPDM tape or other listed flame resistant gasket material and calcium silicate setting blocks.

2.04 SOURCE QUALITY

A. Obtain fire rated glazing products from a single manufacturer.

2.05 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data including product technical bulletins and installation instructions.

3.02 EXAMINATION

A. Examine framing, glazing channels, and stops, with Installer present, for compliance with manufacturing and installation tolerances, including those for size, squareness, and offsets at corners, and for compliance with minimum required face and edge clearances.

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

3.2 PREPARATION

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

B. Examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed work.

3.03 INSTALLATION

A. Installation shall be in strict accordance with the fire glazing material manufacturer's specifications. Field cutting or tampering is strictly prohibited.

3.04 CLEANING AND PROTECTION

A. Protect glass from contact with contaminating substances resulting from construction operations. Remove such substances by method approved by manufacturer.

B. Wash glass on both faces not more than four days prior to date schedule for inspections intended to establish date of Substantial Completion. Wash glass by method recommended by glass manufacturer.

C. Remove temporary coverings and protection of adjacent work areas.

D. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

11/06/18

SECTION 10 11 00 (ADDENDUM 3)

VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Porcelain enamel markerboards.
2. Horizontal sliding marker boards.
3. Aluminum trim and accessories.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Product Supplied But Not Installed Under This Section:

1. Horizontal Sliding Visual Display Units are supplied under this section and installed under Section 06 41 16 as part of the typical teaching wall casework.

D. Related Sections:

1. Section 09 77 23 – Fabric Covered Tack Paneling.

1.2 REFERENCES

A. The editions of standards and specifications published by the following organizations, and referenced herein, apply to the work only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

Aluminum Association (AA)
American Society for Testing and Materials (ASTM)
American National Standards Institute (ANSI)
U.S. General Services Administration (Fed. Spec.)

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.

B. Shop Drawings: For visual display units.

1. Include plans, elevations, sections, details, and attachment to other work.
2. Show locations of panel joints. Show locations of field-assembled joints for factory-fabricated units too large to ship in one piece.
3. Include sections of typical trim members.

C. Samples: Submit full range of color samples for each type of markerboard, trim and accessory required. Provide 12-inch square samples of sheet materials and fabric

swatches and 12-inch lengths of trim members for color verification after selections have been made.

D. Product Schedule: Submit schedule of visual display units. Use same designation indicated on Drawings.

E. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATION SUBMITTALS

A. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For visual display units, to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Wrap or otherwise package markerboard and tackboard components for protection against damage during shipment and storage. Store components in a clean, dry storage area as packaged by the manufacturer, with manufacturer's seals and labels intact. Store porcelain enameled steel markerboard panels on edge in a manner to prevent bowing, warping or other irregularities.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install visual display units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

B. Field Measurements: Verify actual dimensions of construction contiguous with visual display units by field measurements before fabrication.

1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.8 WARRANTY

A. Provide an extended warranty under the provisions of Section 01 78 36.

B. Submit a written warranty executed by manufacturer agreeing to replace porcelain enamel markerboards that do not retain their original writing and erasing qualities, become slick and shiny, or exhibit crazing, cracking, or flaking within the specified warranty period, provided the manufacturer's written instructions for handling, installation, protection, and maintenance have been followed.

1. Warranty Period: “Life of Building” warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers or equal:

Claridge Products and Equipment, Inc.; www.claridgeproducts.com
Platinum Visual Systems™; www.pvsusa.com
Chatfield-Clarke Co., Inc.; www.chatfield-clarke.com
Newline Products, Inc.; www.newlineproduct.com
Substitutions: Section 01 25 13 “Product Options and Substitutions.”

2.2 VISUAL DISPLAY BOARD ASSEMBLY

A. Visual Display Board Assembly: Factory fabricated.

1. Assembly: Markerboard.
2. Corners: Square.
3. Width: As indicated on Drawings.
4. Height: As indicated on Drawings.

B. Markerboard Panel: Porcelain-enamel faced markerboard panel on core indicated.

1. Color: As selected by Architect.

C. Aluminum Frames and Trim: As specified in Article 2.5.

2.3 MARKERBOARD PANELS

A. Porcelain Enamel Markerboard Panels: Balanced, high pressure, factory-laminated markerboard assembly of three-ply construction; consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with low-gloss finish. Laminate panels under heat and pressure with manufacturer’s standard, flexible waterproof adhesive.

B. Face Sheet: ASTM A424, enameling grade steel sheet coated on exposed face with 3 coat process of primer, ground coat and color cover coat, and on concealed face with 2 coat process of primer and ground coat. Fuse cover and ground coats to steel at firing temperatures standard with manufacturer, but not less than 1200 degrees F.

1. Finish: Low gloss finish for use with dry-erase markers that wipe clean with dry cloth or standard eraser, and that is suitable as a projection screen.

2. Proprietary Facing Sheet: At Contractor's option, "Writanium®” 28 gauge steel face with porcelain enamel finish by Platinum Visual Systems; or "LCS-II" porcelain enamel clad, Type 1 stretcher-leveled aluminized steel face sheet, by Claridge Products and Equipment, Inc. may be provided in lieu of facing sheet construction specified above. Fuse porcelain enamel coating to steel at approximately 1000 degrees F (538 degrees C).

3. Facing Sheet Thickness: 24-gage.

4. Cover Coat Finish: Special writing surface with gloss finish intended for use with manufacturer recommended fast drying liquid felt-tipped markers. Color: As selected by Architect.

C. Core: Particleboard complying with ANSI A208.1-1989, Grade 1-M-1, nominal 1/2-inch thick.

D. Backing Sheet: Aluminum sheet, 0.005-inch thick.

E. Laminating Adhesive: Manufacturer's standard moisture resistant thermoplastic type.

2.4 HORIZONTAL SLIDING UNITS

A. Horizontal-Sliding Visual Display Units: Factory-fabricated units consisting of extruded-aluminum tubular frame, aluminum-framed horizontal-sliding visual display panels, and extruded-aluminum fascia that conceals overhead sliding track; designed for recessed mounting. Provide panels that operate smoothly without vibration or chatter.

1. Basis-of-Design Product: Platinum Visual Systems™, WHS Series.

2. Three-Track Units: Provide three sliding panels; each equal to not less than one-third of overall length of unit.

3. Hardware: Manufacturer's standard, extruded-aluminum overhead track and channel-shaped bottom guides; with two nylon ball-bearing carriers and two nylon rollers for each sliding panel.

4. Overall Width: As indicated on Drawings.

5. Overall Height: 4’-0”.

2.5 ALUMINUM TRIM AND ACCESSORIES

A. Fabricate frames and trim of not less than 0.062 inch thick, 6063-T5 alloy aluminum extrusions. Provide trim in straight single lengths wherever possible, keep joints to a minimum. Miter corners to a neat, hairline closure.

1. Finish: Clear anodized finish meeting the requirements of AA designation M12C22A31.

B. Field Applied Trim: Manufacturer's standard slip-on trim.

C. Chalktray: Manufacturer's standard ribbed section, solid extrusion with exposed ends smoothly curved. Provide chalktray under all markerboards and tackboards.

D. Map Rails: Integral part of top edge angle, continuous at top of all markerboards and tackboards. Provide the following accessories:

1. Display Rail: Continuous 1-inch wide cork display rail integral with map rail.

2. End Stops: One at each end of each map rail.

3. Map Hooks with Flexible Metal Clips: Two for each 4 foot of map rail or fraction thereof.

4. Roller Shade Brackets: Two for each 4 foot of map rail or fraction thereof.

5. Flagholder: One for each room.

2.6 FASTENERS

A. Anchors for attachment of visual display units at CMU walls: Hilti Screw Anchor KWIK HUS-EZ, size as shown on drawings.

1. Approvals: ICC ESR-3056 for Kwik HUS-EZ Screw Anchors in Masonry.

2.7 FABRICATION

A. Assembly: Provide either factory-assembled or field-assembled markerboard and tackboard units.

B. Make joints only where total length exceeds maximum manufactured length. Fabricate with the minimum number of joints, balanced around the center of the board, as acceptable to the Architect.

C. Splice rails shall be manufacturer's standard "H" sections designed to receive and lap board on both edges along vertical butt joints. Exposed face of splice rail shall be colored to match adjacent board. No butt joints will be permitted in boards less than 16 feet in length.

D. Provide manufacturer's standard mullion trim at joints between markerboards and tackboards.

2.8 GENERAL FINISH REQUIREMENTS

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

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.9 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

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

B. Examine walls and partitions for proper preparation and backing for visual display units.

C. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.

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

3.2 PREPARATION

A. Comply with manufacturer's written instructions for surface preparation.

B. Clean substrates of substances that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.

C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.

D. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION

A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

B. Factory-Assembled Units: Deliver factory-assembled markerboard and tackboard units completely assembled in one piece without joints, wherever possible. Where dimensions exceed panel size, provide 2 or more pieces of equal length as acceptable to the Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the project site. Use splines at joints to maintain surface alignment.

C. Field Assembled Units: Install plumb and level directly to wall surface, with full aluminum surround trim, chalk tray, fastenings and all related accessories. Check for surface movement under hand pressure and reinstall board if movement occurs. No markerboard joints will be allowed unless the board is over 12 feet long.

D. Install units in accordance with manufacturer's instructions. Keep perimeter lines straight, plumb, and level. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for a complete installation.

E. Aluminum Trim: Provide neat, tightly closed, bend-around mitered corners, spliced only if over 16 foot lengths, with no single piece less than 4 feet in length. Fasten to walls with concealed fasteners as recommended by the manufacturer.

3.4 CLEANING AND PROTECTION

A. Clean visual display units according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.

B. Touch up factory-applied finishes to restore damaged or soiled areas.

C. Cover and protect visual display units after installation and cleaning.

END OF SECTION

11/09/18

SECTION 11 52 13 (ADDENDUM 3)

PROJECTION SCREENS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Electrically operated, front-projection screens and controls.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Requirements:

1. Section 09 22 16 “Non-Structural Support Framing” for support framing for front-projection screens.

2. Division 26 “Electrical” for power supply, conduit, and wiring.

1.2 DEFINITIONS

A. Gain: Indication of screen’s luminance or brightness, measured perpendicular to screen center and relative to magnesium carbonate block, which serves as standard for 1.0 gain. Higher numbers indicate greater brightness.

B. Viewing Angle: Horizontal angle from perpendicular center of screen at which gain or brightness decreases by 50%.

C. Half-Gain Angle: The angle, measured from the axis of the screen surface to the most central position on a perpendicular plane through the horizontal centerline of the screen where the gain is half of the peak gain.

D. Format: Proportion of projection screen viewing area expressed as a ratio of width/height.

1. 16:10 Wide: 1.60:1.

1.3 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

Aluminum Association (AA)
American Society for Testing and Materials (ASTM International)

B. Society of Motion Picture and Television Engineers (SMPTE):

1. SMPTE RP 94-2000 Gain Determination of Front Projection Screens.

C. Underwriters Laboratories Inc. (UL).

1.4 ACTION SUBMITTALS

A. Product Data: Submit copies of manufacturer's catalog cuts, specifications and installation instructions for each type of projection screen.

B. Shop Drawings: Show layouts and types of front-projection screens. Include the following:

1. Shop drawings shall indicate all grounds, backing, blocking, sleepers and other items required for the installation of equipment that is to be furnished and installed as part of the structure. Provide necessary templates.

2. Drop lengths.

3. Location of seams in viewing surfaces.

4. Location of screen centerline relative to ends of screen case.

5. Anchorage details, including connection to supporting structure for suspended units.

6. Details of juncture of exposed surfaces with adjacent finishes.

7. Location of wiring connections for electrically operated units.

8. Wiring diagrams for electrically operated units.

9. Accessories.

C. Samples: Submit 2 samples of screen finish material having dimensions of 6 inches x 6 inches.

D. Submittal procedures and quantities are specified in Section 01 33 00.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Submit for products in accordance with Section 01 78 23. Include:

1. Manufacturer’s instructions detailing maintenance requirements.

2. Parts catalog that includes complete list of repair and replacement parts, with cuts and identifying numbers.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with 2016 California Building Code and 2016 California Electrical Code.

B. Installer Qualifications: Provide experienced and qualified technicians to install electrically operated projection screens.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Environmental Limitations: Do not deliver or install front-projection screens until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC

system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.8 COORDINATION

A. Coordinate layout and installation of front-projection screens with adjacent construction, including ceiling suspension systems, light fixtures, HVAC equipment, and partitions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Projection Screens: Obtain each type of front-projection screen from single manufacturer. Obtain accessories, including necessary mounting hardware, from screen manufacturer.

2.2 ELECTRICALLY OPERATED PROJECTION SCREENS

A. General: Provide recessed, electrically operated projection screens. Sizes as indicated. Acceptable manufacturers/products or equal:

Da-Lite Screen Company Inc.; www.da-lite.com
Bretford Manufacturing Co.; www.bretford.com
Draper Shade & Screen Co., Inc.; www.draperinc.com

1. Basis of Design Product for Computer Classroom E3 and E4: Da-Lite Screen Company Inc.; Model: Tensioned Advantage® Electrol®.

2. Basis of Design Product for Projects Classroom E13: Da-Lite Screen Company Inc.; Model: Tensioned Contour® Electrol®.

2.3 ELECTRICALLY OPERATED PROJECTION SCREENS – COMPUTER CLASSROOM E3 & E4

A. Type 2: Ceiling Recessed Electrically Operated Projection Screen:

1. Screen Operation: Electrically operated, UL listed, retractable, with 1 rigid metal roller and tab guide cable screen tensioning system.

2. Motor: Housed inside metal roller and including automatic thermal overload protection, integral gears, capacitor and electric brake to prevent coasting.
   a. Type: 3-wire with ground with quick connect male plug-in connector, permanently lubricated, quick reversal type designed for mounting inside roller.
   b. Quantity: 1 per each screen.
   c. Voltage, Frequency: 115 V, 60 Hz.
   d. Amperage: 2.4 amps maximum.
   e. Include preset, adjustable limit switches to automatically stop viewing surface in UP or DOWN position.

3. Electric Controls: Wall-mounted switch.
   a. Voltage, Frequency: 115 V, 60 Hz.
   b. Switch: 3 position type with cover plate for UP, DOWN and STOP functions.
   c. Junction Box: Internally attached to screen case.

4. Screen Mounting: Ceiling recessed and plenum rated type.
   a. Mounting Hardware: Include mounting hardware.

5. Screen Case: Designed to receive mounting hardware and sized to suit projection screen.
   a. Type 1: Extruded aluminum with heavy gage steel end caps and adjustable steel brackets.
      1) Case Bottom: Self-trimming with built-in flange and equipped with concealed-hinge aluminum door for manual access.
      2) Finish: White powder coated.
   b. Case Length: 129 inches.

6. Screen Size:
   a. Viewing Area: 69 inches High x 110 inches Wide.
   b. Overall Dimensions: [*] inches High x 110 inches Wide. * Overall height equals 69 inches plus Screen Drop inches.

7. Acceptable Material: Da-Lite Screen Company, Inc. Tensioned Advantage® Electrol Projection Screen.
   a. Tab Guide Cable Tensioned Screen Material:
      1) Front projection, flame retardant, mildew resistant vinyl, with black backing and with standard black borders, easily cleaned with mild soap and water solution.
      2) Include tab and cable guide on each side of fabric to maintain even, lateral tension and hold viewing surface flat.
      3) Bottom end of fabric to be inserted into a custom aluminum slat bar with added weight to provide vertical tension on the screen surface.
      4) Slat ends to be protected by heavy-duty plastic caps enclosing a preset adjustable mechanism for screen tensioning.
      5) Seamless in all sizes.
   b. Gain: To SMPTE RP 94-2000; 1.1.
   c. Half Angle: 85 degrees.
   d. Format: 16:10 Wide – 1.60:1.
   e. Acceptable Viewing Surface: Da-Lite Screen Company, Inc.: HD Progressive 1.1.

B. Accessories:

1. Screen Drop: Provide extra drop length of black fabric as needed at top of screen for bottom of screen to be 36 inches above floor.

2. Key Operated Switch for 115V: Flush mounted wall control with white cover plate, key activated for security.

3. Installation Hardware: Fasteners and other components of type, size and spacing recommended by manufacturer for complete, functional and secure installation of electric screen.

2.4 ELECTRICALLY OPERATED PROJECTION SCREENS – PROJECTS CLASSROOM E13

A. Type 1: Wall Mounted Electrically Operated Projection Screen:

1. Screen Operation: Electrically operated, UL listed, retractable, with 1 rigid metal roller and tab guide cable screen tensioning system.

2. Motor: Housed inside metal roller and including automatic thermal overload protection, integral gears, capacitor and electric brake to prevent coasting, and

preset, adjustable limit switches to automatically stop viewing surface in the UP or DOWN positions.
a. Type: 3-wire, permanently lubricated, reversal type designed for mounting inside roller and to suit project requirements.
b. Voltage, Frequency: 115 V, 60 Hz.
c. Amperage: 2.4 amps maximum.

3. Electric Controls: Wall mounted switch with integral junction box incorporated into screen housing.
a. Voltage, Frequency: 115 V, 60 Hz.
b. Switch: 3 position type with cover plate for UP, DOWN and STOP functions.

4. Screen Mounting: Wall.
a. Include mounting hardware and roller mounting brackets that adjust to allow centering or offsetting of the screen within the case.

5. Screen Case: Designed to receive mounting hardware and sized to suit projection screen.
a. Material: Extruded aluminum.
b. Design: 2-piece with curved contour flat-backed style with heavy-duty end caps concealing roller ends.
c. Length: 138-3/4 inches.
d. Finish:
1) Case Front: Powder coated white.

6. Screen Size:
a. Viewing Area: 72-1/2 inches High x 116 inches Wide.
b. Overall Dimensions: [*] inches High x 116 inches Wide. *Overall height equals 72-1/2” plus Screen Drop inches.

7. Acceptable Material: Da-Lite Screen Company, Inc. Tensioned Contour® Electrol® Projection Screen.
a. Tab Guide Cable Tensioned Screen Material:
1) Front projection, flame retardant, mildew resistant vinyl, with black backing and with standard black borders, easily cleaned with mild soap and water solution.
2) Include tab and cable guide on each side of fabric to maintain even, lateral tension and hold viewing surface flat.
3) Bottom end of fabric to be inserted into a custom aluminum slat bar with added weight to provide vertical tension on the screen surface.
4) Slat ends to be protected by heavy-duty plastic caps enclosing a preset adjustable mechanism for screen tensioning.
5) Seamless in all sizes.
b. Gain: To SMPTE RP 94-2000; 1.1.
c. Half Angle: 85 degrees.
d. Format: 16:10 Wide – 1.60:1.
e. Acceptable Viewing Surface: Da-Lite Screen Company, Inc.: HD Progressive 1.1.

B. Accessories:

1. Screen Drop: Provide extra drop length of black fabric as needed at top of screen for bottom of screen to be 36 inches above floor.

2. Key Operated Switch for 115V: Flush mounted wall control with white cover plate, key activated for security.

3. Installation Hardware: Fasteners and other components of type, size and spacing recommended by manufacturer for complete, functional and secure installation of electric screen.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Site Verification of Conditions:

1. Verify that conditions of substrates previously installed under other sections are acceptable with electrically operated projection screen installation.

2. Ensure electrical power supply is installed to meet electric projection screen requirements in accordance with Division 26 – Electrical.
   a. Verify type and location of power supply.

3. Inform Architect of unacceptable conditions immediately upon discovery.

4. Proceed with installation only after unacceptable conditions have been corrected.

3.2 COORDINATION

A. Coordinate electric projection screen placement with other ceiling- and wall-mounted components.

3.3 INSTALLATION

A. Install electric projection screens in accordance with the drawings, the manufacturer's directions and instructions, and to suit the conditions. Proper backing shall be provided for all items.

B. Install front-projection screens with screen cases in position and in relation to adjoining construction indicated. Securely anchor to supporting substrate in a manner that produces a smoothly operating screen with vertical edges plumb and viewing surface flat when screen is lowered.

1. Install low-voltage controls according to NFPA 70 and complying with manufacturer's written instructions.
   a. Wiring Method: Install wiring in raceway except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Use UL-listed plenum cable in environmental air spaces, including plenum ceilings. Conceal raceway and cables except in unfinished spaces.
2. Test electrically operated units to verify that screen controls, limit switches, closures, and other operating components are in optimum functioning condition.

3.4 PROTECTION

A. Provide protection for installed screens so that they will be in satisfactory operating condition, without damage, at completion of the project. Repair or replace damaged units as directed by the Architect.

B. Installation shall be made without damage to the surfaces to which the items are attached. After completion of the installation, accessories and surfaces shall be cleaned and left in perfect condition.

END OF SECTION

11/12/18

SECTION 12 24 13 (ADDENDUM 3)

ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Manually operated roller shades with single rollers.

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Sections:

1. Section 06 10 53 “Miscellaneous Rough Carpentry” for blocking and backing for attachment of shades to wood substrate.
2. Section 07 92 00 “Joint Sealants” for sealing the perimeters of installation accessories for light-blocking shades with a sealant.

1.2 REFERENCES

A. The editions of the specifications and standards referenced herein, published by the following organizations, apply to the work only to the extent specified by the reference. Refer to Section 01 42 19 for information concerning availability and use of references.

B. American Type Culture Collection (ATCC):
1. 9642, 9644, 9645 - Fungi, Yeast and Yeast Genetic Stock

C. ASTM International:
1. ASTM G 21 - Determining Resistance of Synthetic Polymeric Materials to Fungi.

D. Federal Specifications:
1. FS CCC-T-1Slb: Flame Retardancy of Textiles.

E. Glass Association of North America:
1. GANA - Glazing Manual.

F. National Fire Protection Association (NFPA):
1. NFPA 70 - National Electrical Code.
2. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Film.

G. State of California Code of Regulations:
1. Title 19 - Public Safety, State Fire Marshal.

H. Underwriters' Laboratories, Inc. (UL)

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Submit drawings, including actual measurements taken at the project where practical. Drawings shall include head, jamb and sill details as necessary to coordinate work with surrounding conditions and construction.

1. Provide elevations, sections, and details. Show tube and bracket sizes for each condition.

2. Show size and location of blocking and backing required for installation of shades. Show mounting details and method of attachment of shades to backing.

C. Selection Samples: For each finish product specified, two complete sets of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

D. Verification Samples: Submit one fully operational window shade sample, not less than 16 inches wide by 36 inches long for each type of roller shade indicated, complete with selected aluminum trim showing color and shade cloth including sample of seam/batten when applicable.

1. Valance/Fascia: Submit 3" samples of specified finish.

E. Product Schedule: Provide schedule of chain operated clutch roller shades. Use the same designations as indicated on drawings. If necessary, indicate tube diameter for each shade.

F. Submittal procedures and quantities are specified in Section 01 33 00.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer. Submit a letter indicating that installer is authorized by the manufacturer to install specified product.

B. Product Certificates: For each type of shadeband material, signed by product manufacturer.

C. Installation Instructions: Submit complete manufacturer's installation instructions.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For roller shades to include in maintenance manuals. Include maintenance procedures, recommended maintenance materials, parts diagrams, and suggested schedule for cleaning. Include precautions about cleaning materials that could damage or discolor the shade fabric.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm specializing in manufacturing manual roller shades with at least 7 years experience.

B. Installer Qualifications: Approved by roller shade manufacturer. Installers shall be specially trained in the installation of chain operated clutch roller shades. Installers shall have completed at least 5 commercial installations of chain operated clutch roller shades similar to those specified in this Section.

C. Fire-Performance Characteristics: Fabrics shall be inherently flame retardant material or shall be flame retardant treated to comply with the small scale and large-scale test requirements of NFPA 701 and 2013 California Code of Regulations, (CCR) Title 19, Section 1273.3. If treated, fabric shall pass the small and large scale test after being subjected to the accelerated dry cleaning or laundering cycles specified in NFPA 701. Material requiring flame retardant treatment shall be treated by an applicator holding a valid "Flameproofers Certificate" from the State Fire Marshal.

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

1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

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

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Do not deliver shades to the project until all concrete, masonry, plaster and other wet work has been completed and is dry. Deliver prefabricated shades to site in labeled protective packages, uniquely identified for each intended location. Schedule delivery to prevent delays but minimize on-site storage.

B. Storage: Store materials in manner recommended by shade manufacturer, inside, under cover, and in manner to keep shades dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes.

1.8 FIELD MEASUREMENTS

A. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry. Air conditioning system shall be operating, and ambient temperature shall be between 60 degrees F. and 85 degrees F. Relative humidity shall be between 45 percent and 65 percent.

B. Before Installation Begins:

1. Roof shall be tight, windows and frames installed and glazed, and interior doors hung.

2. Wet work including concrete, masonry, stucco, shall be complete and dry.

3. Application of gypsum wallboard, joint treatment, taping and sanding shall be complete and dry.

4. Ceilings, window pockets, electrical, and mechanical work above the product shall be complete.

5. Flooring materials such as resilient, tile, etc. must be completed.

C. Electrical power (110 volt AC) shall be available for installer's tools within 500 feet of product installation areas.

1.10 WARRANTY

A. Provide an extended warranty under the provisions of Section 01 78 36.

B. General Warranty: The warranties specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

C. Special Warranty: Submit a written warranty signed by roller shade manufacturer and Contractor agreeing to repair or replace roller shade components that do not remain fully operational for the warranty periods specified below after date of “Substantial Completion. Warranty does not include failure of the bead chain.

1. Shade cloth: 25 years.
2. Operating hardware: 25 years.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Acceptable manufacturer or equal:

1. Mariak Contract; www.mariak.com
2. Mecho-Shade Systems, Inc.; www.mechoshade.com
3. Draper, Inc.; www.draperinc.com
4. Skyco Shading Systems, Inc.; www.skycoshade.com
4. Substitutions: Section 01 25 13 – Product Options and Substitutions.

B. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 SYSTEM DESCRIPTION

A. Chain operated clutch roller shade system shall consist of a roller, brackets to support the roller, a flexible fabric carried by the roller, a means of attaching the material to the roller, a bottom bar, and a chain operator to lift and lower the shade.

2.3 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Rollers:

1. Clutch Mechanism: Corrosion resistant PA-6 plastic with glass fiber and internal mechanism of Nylon 6 construction. Provide a heavy-duty single spring that creates a positive mechanical relationship between the roller shade tube unit and the universal installation bracket to ensure stationary positioning in the static state. When activated the wrap spring shall release and permit the clutch to turn while

reducing friction on the clutch. Clutch mechanisms with multiple springs are not acceptable.

a. Clutch End Locking System: The clutch shall have a locking system, which prevents the shade from coming out of its brackets if the shade is operated incorrectly.

2. Clutch Bracket: The clutch shall be fixed to the installation bracket with tech screws. It must be removable without having to remove the installation brackets from the wall. Clutch mechanism shall be fastened with screws and not riveted to the brackets.

3. Spring Loaded Idle End Cap: The idle end of clutch shall be spring loaded to provide secure anchorage into end bracket and to provide for simple and easy installation.

4. Spring roller diameter length and material as needed to support shade length, width, and material weight 1-1/4" diameter minimum x width needed to cover window.

5. Use steel rollers for all shades exceeding 45 in width; heavy-duty springs and positive locking mechanisms.

B. Tube Mechanism: Extruded T6 aluminum with a wall thickness not less than 0.062 inch. Each tube shall have at least one Secure Grip Spline fabric-fixing slot to increase the rigidity of the tube and eliminate sagging when the shade is operated. T5 aluminum is not acceptable.

1. Tube sizes shall be as proposed by manufacturer for each condition, and as indicated on approved submittals.

2. Spline Mounting System: Secure Grip Spline Method, consisting of flexible PVC extrusion RF (radio frequency) or impulse welded to the shade fabric. The spline shall be inserted into a slot on the extruded aluminum tube. The spline shall provide a positive mechanical attachment of the shade band to the tube. The spline shall be designed to allow fabric to be easily removed and re-installed on the roller shade tube without having to remove the roller tube from the brackets. Splines that slide in the tube mechanism from the edge are not acceptable. Double-sided tape or glue methods of fabric attachment are not acceptable.

C. Shadebands:

1. Shadeband Material: Light-blocking fabric as scheduled. See Article 2.4 for requirements.

D. Hem Bar/Slat:

1. Three Sided Welded Pocket (Bottom Weight): Aluminum extrusion one inch in height held inside a fabric bottom-pocket. The bottom-pocket shall be created by folding a 1-1/4 inch section of fabric behind the bottom of the shade and RF or impulse welding the fabric to itself. After the aluminum weight is inserted into the bottom-pocket the edges shall be sealed by again RF or impulse welding the fabric edges to itself.

E. Tube Mounting Brackets: Universal type, capable of attachment at top, face, and with left hand or right hand controls. Brackets shall accept end cap locking system. If selected without Valance/Fascia, bracket color shall be white or black, painted finish as selected. Zinc plated or mill finish brackets are not acceptable. Size shall be as required for each condition, and as indicated on approved submittals.

F. Chain:

1. Chain: Qualified No. 10 stainless steel ball chain. Nickel plated steel chain not acceptable. Include cord clasp to be mounted at appropriate height above window sill side wall.

2. Braided fabric cord is not acceptable.

3. Chain shall be rated for 90 lbs. breaking strength.

G. Valance/Fascia: Provide an aluminum fascia in square profile to conceal the roller shade tube mechanism. Valance/fascia shall have a wall thickness of 5/16", with paint finish in color as selected by Architect from manufacturer's standard colors. The fascia shall be attached to the tube mounting brackets by snapping it into place on a hinge rib clip. Size shall be as required to conceal the roller tube and rolled-up shade fabric. Color as selected by Architect from manufacturer's standard colors.

1. Where ends of fascia are exposed, provide end caps.

2.4 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Blocking Fabric: Opaque fabric, stain and fade resistant. Acceptable products or equal:

1. Flocke by Mermet:
   a. Type: Opaque, PVC-free fiberglass textile with acrylic backing.
   b. Weight: 14.7 oz/sq yd,
   c. Thickness: 0.021 inches thick.
   d. Fire Rating: NFPA 701, both small- and large-scale tests.
   e. Antistatic treated.
   f. Environmental Certification: GreenSpec listed.
   g. Lead Free: RoHS – Lead Free.
   h. Openness Factor: Opaque.
   i. Color: As selected by Architect.

2. SheerWeave Series SW7000 by Phifer:
   a. Type: PVC-free polyester with acrylic foamed backing.
   b. Weight: 10 oz/sq yd, opaque.
   c. Thickness: 0.018 inches thick.
   d. Fire Classification: California U.S. Tile 19 (small scale), NFPA 701(small scale).
   e. Environmental Certification: GreenSpec listed.
   f. Lead Free: RoHS-Lead Free.
   g. Openness Factor: Opaque.
   i. Color: As selected by Architect.

3. Avila Twilight by Mermet.
   a. Type: 37.5 percent Polyester; 62.5 percent acrylic.
   b. Fire Classification: NFPA 701-10, California U.S. Title 19.
   c. Environmental Certifications: GREENGUARD; RoHS-Lead Free.
   d. Approximate Openness Factor: 0 percent.
   e. Average Fabric Thickness: 0.017 inch.
   f. Average Fabric Weight: 12.09 ounces per square yard.
   g. Color: As selected by Architect.

2.5 ROLLER SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jambs Installation: Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise. Comply with manufacturer's edge clearance standards and recommendations. Length equal to head-to-sill dimension of opening in which each shade is installed.

2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

C. Fabricate shades square, and free of sharp edges, burrs or other defects.

D. Shadeband Fabrication: Fabricate shade cloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shade cloth to roll true and straight without shifting sideways more than 1/8-inch in either direction per 8 feet of shade height due to warp distortion or weave design.

E. Multi-banded Shades: Provide for operation of multiple shade bands by a single chain operator subject to manufacturer’s design criteria. Multi-banded manually operated shades shall be capable of smooth operation when offset a maximum of 6 degrees on each side of the plane perpendicular to the radial line of the curve (12 degree total offset).

2.6 FINISHES

A. Aluminum Components: Architect shall select from manufacturer's standard silicone polyester based baked enamel.

B. Steel Components: Cadmium-plated, satin-finished, or bonderized prior to painting with Manufacturer’s standard baked-enamel finish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work. Do not commence installation until conditions are satisfactory. Commencement of installation indicates acceptance of site conditions by Contractor. Notify the Architect upon inspection when the project conditions are unacceptable for shade installation. Beginning of installation means acceptance of substrate and project conditions.

B. Verify that room temperature is a minimum of 65 degrees F. and that painting and other dust-producing operations are complete.

3.2 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions.

1. Opaque Shadebands: Located so shade band is not closer than 2 inches to interior face of glass. Allow proper clearances for window operation hardware and accessories to provide smooth operation without binding.

B. Install units within the following tolerances:

1. Maximum variation of gap at window opening perimeter: 1/4-inch, per 8-feet (+/-1/8 inch) of shade height.

2. Maximum offset from level: 1/16-inch per 5-feet of shade width.

C. Mounting brackets for shades shall not be installed on window stops.

D. Roller shade Locations: As indicated on Drawings.

3.3 ADJUSTING

A. Adjust drive / brake mechanism of units for smooth operation. Adjust shade and shade cloth to hang flat without buckling or distortion. Replace any units or components that do not hang properly or operate smoothly.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION

11/12/18

SECTION 32 13 13 (ADDENDUM 3)

CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes Concrete Paving**,** including the following:

1. Walks (concrete flatwork).

B. Related Documents: The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

C. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for general building applications of concrete.

1.2 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.3 REFERENCES

A. ASTM International:

1. ASTM A615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
2. ASTM C150 - Standard Specification for Portland Cement.
3. ASTM D1557-12e1 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3)
4. ASTM D5035 - 11(2015) - Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method).

B. California Code of Regulations (CCR): Title 24, Chapter 2-71, Site development Requirements for Handicapped Accessibility.

C. California Department of Transportation (C.D.T.):

1. Standard Specifications:
   a. Section 26 Aggregate Bases.
   b. Section 37 Bituminous Seals.
   c. Section 39 Asphalt Concrete.
   d. Section 51 Concrete Structures.
   e. Section 52 Reinforcement.
   f. Section 73 Concrete Curbs and Sidewalks.
   g. Section 90 Portland Cement Concrete.
   h. Section 92 Asphalts.
   i. Section 93 Liquid Asphalts.
   j. Section 94 Asphaltic Emulsions.

2. Traffic Manual.
3. Highway Design.

D. Institute of Transportation Engineers: Transportation and Traffic Engineering Handbook.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Furnish mill test reports on the cement, reinforcement bars, and aggregates, showing compliance with the respective specifications. The Owner's Testing Lab may make concrete test cylinders and slump tests as deemed necessary to determine compliance with the Specifications.

B. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 INFORMATIONAL SUBMITTALS

A. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Fiber reinforcement.
4. Admixtures.
5. Curing compounds.
6. Bonding agent or epoxy adhesive.
7. Joint fillers.

B. Material Test Reports: For each of the following:

1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

1.6 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

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 mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship.
2. Build mockups of concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 60 inches by 60 inches.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

1.8 GENERAL DESIGN CRITERIA

A. Walks and Paths: Concrete exterior slabs (walks, terraces, etc.) shall have a pitch of at least 2 percent. (unless otherwise noted on the drawings)

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

B. Plain-Steel Wire: ASTM A 1064/A 1064M, galvanized.

C. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.

D. Tie Bars: ASTM A 615/A 615M, Grade 60; deformed.

E. Hook Bolts: ASTM A 307, Grade A, internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

G. Zinc Repair Material: ASTM A 780/A 780M.

2.4 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150/C 150M, gray portland cement Type I or II.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, 3/4-inch maximum size conforming to Section 90 of the C.D.T. Standard Specifications.

C. Admixtures: No admixtures will be allowed without prior approval of the District.

D. Water: Potable and complying with ASTM C 94/C 94M.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

2.6 RELATED MATERIALS

A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber, in preformed strips.

1. Filled joints, unless noted otherwise on the Drawings: 1/4-inch thick, the full depth of the concrete section and conforming to Section 51 of the C.D.T. Standard Specifications.
2. Joint filler: Conform to Section 51 of the C.D.T. Standard Specifications for pre-molded expansion joint filler and expanded polystyrene joint filler.

B. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

C. Epoxy-Bonding Adhesive: ASTM C 881/C 881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.7 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.

B. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 3000 psi.
2. Maximum W/C Ratio at Point of Placement: 0.50.
3. Slump Limit: 4 inches, plus or minus 1 inch.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to Section 90 of the C.D.T. Standards Specifications. Furnish batch certificates for each batch discharged and used in the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction. Limit vehicle speed to 3 mph.

C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.2 SURFACE PREPARATION

A. Scarify earth subgrade to a depth of not less than 6-inches and compact it to 95 percent of maximum density.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 BASE COURSE

A. Spread and compact base course on prepared subgrade in accordance with CALTRANS Standard Specifications, paragraphs 26-1.04 and 26-1.05.

3.5 FORM CONSTRUCTION

A. Set forms to required grades and lines, braced and secured. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement. Coat forms with a non-staining form release agent.

B. Check completed formwork for grade and alignment to following tolerances:

1. Top of forms not more than 1/8-inch in 10-feet.

2. Vertical face on longitudinal axis, not more than 1/4-inch in 10-feet.

C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

3.6 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

3.7 CONCRETE PLACEMENT

A. General: Comply with requirements of Section 03 30 00 “Cast-in-Place Concrete” unless otherwise indicated.

B. Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

C. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for

hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing and joint devices.

D. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than 1/2 hour, place a construction joint.

E. Screed pavement surfaces with a straightedge and strike off. Commence initial floating using bull floats or darbies to form an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations.

3.8 INSTALLATION OF SIDEWALKS AND OTHER FLATWORK

A. Placing: Place concrete in accordance with Section 03 30 00 “Cast-in-Place Concrete.” Strike off and compact the fresh concrete until a layer of mortar has been brought to the surface. Float the surface to grade and cross section with a float not less than 10-feet long and not less than 6-inches wide. Trowel surfaces to a uniform smooth texture free of trowel marks ready to receive final finish as specified below.

1. Wetting of concrete surfaces during screeding, initial floating, or finishing operations is prohibited.

B. Joints: Tool the surfaces of flatwork to provide weakened plane joints in accordance with patterns indicated. Where no pattern is indicated, mark flatwork into rectangles not less than 12-square feet or more than 20-square feet. Use a scoring tool that will leave the corners rounded. Form expansion joints 1/4-inch wide at all returns and opposite expansion joints in curbs. Where curb is not adjacent, form expansion joints at intervals of 60 feet. Fill expansion joints with premolded expansion joint filler as specified in paragraph 2.6.A.

C. Tolerances: The surface of flatwork shall not vary more than 0.02-foot from a 10-foot straight edge except at grade changes.

D. Broom Finish: Floor and ground surfaces to be stable, firm, and slip-resistant, complying with CBC 11B-302. After concrete has been troweled and joints have been formed, use a stiff fiber broom to provide a uniformly straight, scored, slip-resistant surface at right angles to the general flow of traffic.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, slip-resistant, fine-line texture.

3.9 CURING

A. Curing: Comply with requirements of Section 03 30 00 “Cast-in-Place Concrete.”

3.10 REPAIRS AND PROTECTION

A. Remove and replace concrete pavement that is broken, damaged, or defective, or does not meet requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement before date scheduled for inspections.

3.11 CLEAN-UP

A. During the progress of the work and at the completion of the work, remove all trash, debris, etc., from the project site and leave the site clean and in orderly condition.

END OF SECTION

10/05/18

DOOR AND FRAME SCHEDULE

DOOR							RATING	HDWR		FRAME			DETAIL			SIGNAGE PER (G-003)
DOOR #	SIZE	THK	TYPE	MATL	FIN	INT/EXT	MIN	GRP	PH	TYPE	MATL	FIN	HEAD	JAMB	SILL	
E17	3'0"X7'0"	1 3/4"	E	AL	FF	EXT	–	17	Y	(E)	(E)	(E)	7/A-561	8/A-561	1/A-561	2 & 3

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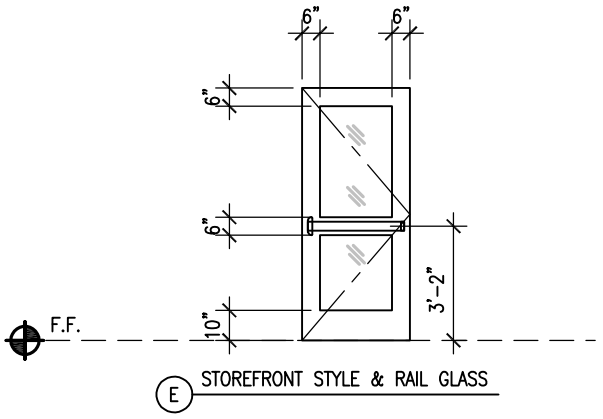

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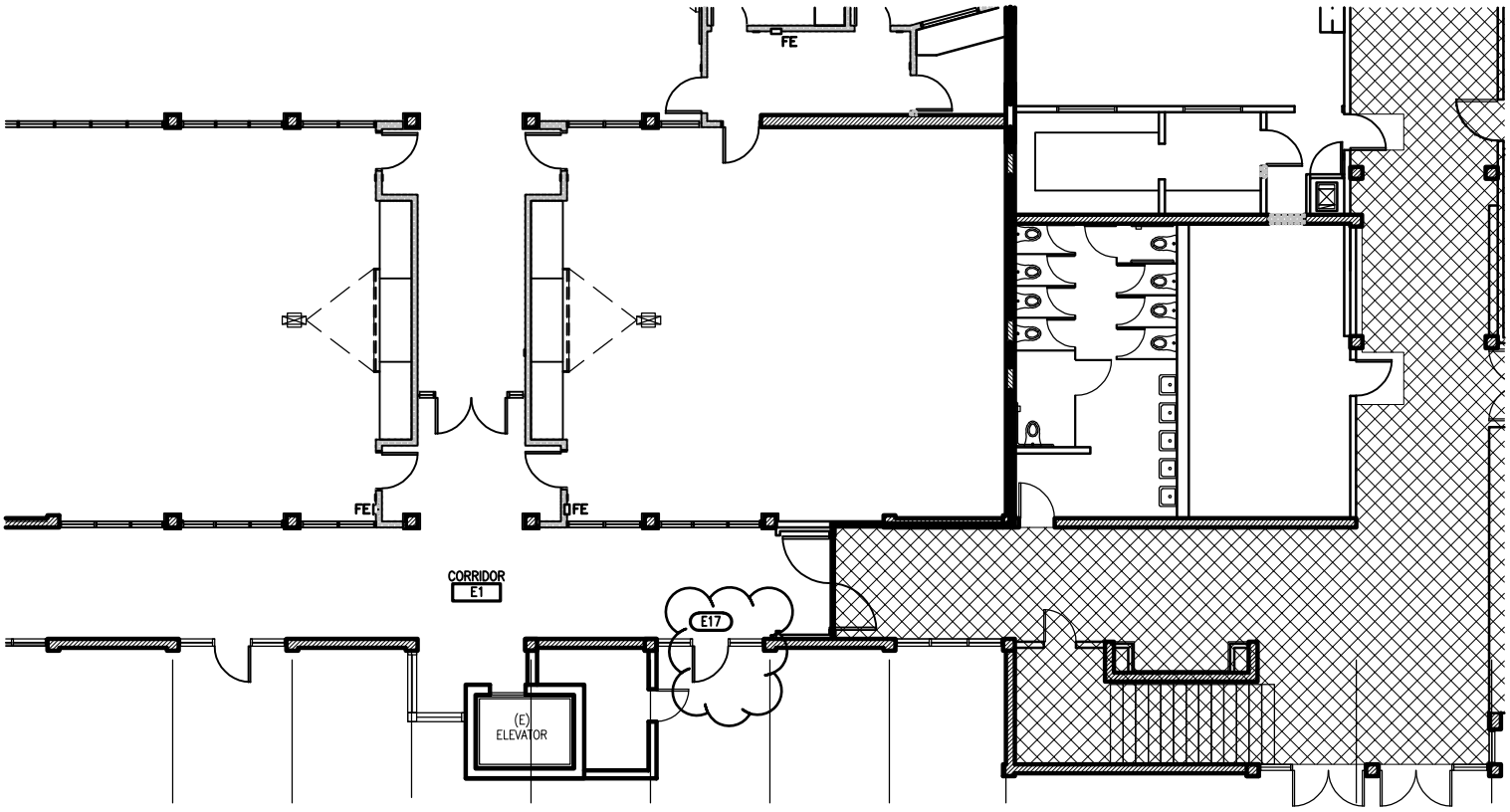


HED
417 Montgomery Street
Suite 400
San Francisco, CA 94104
(415) 981-2345

TITLE: DOOR & DOOR OPERATOR

DSA APPL. # 01-117586

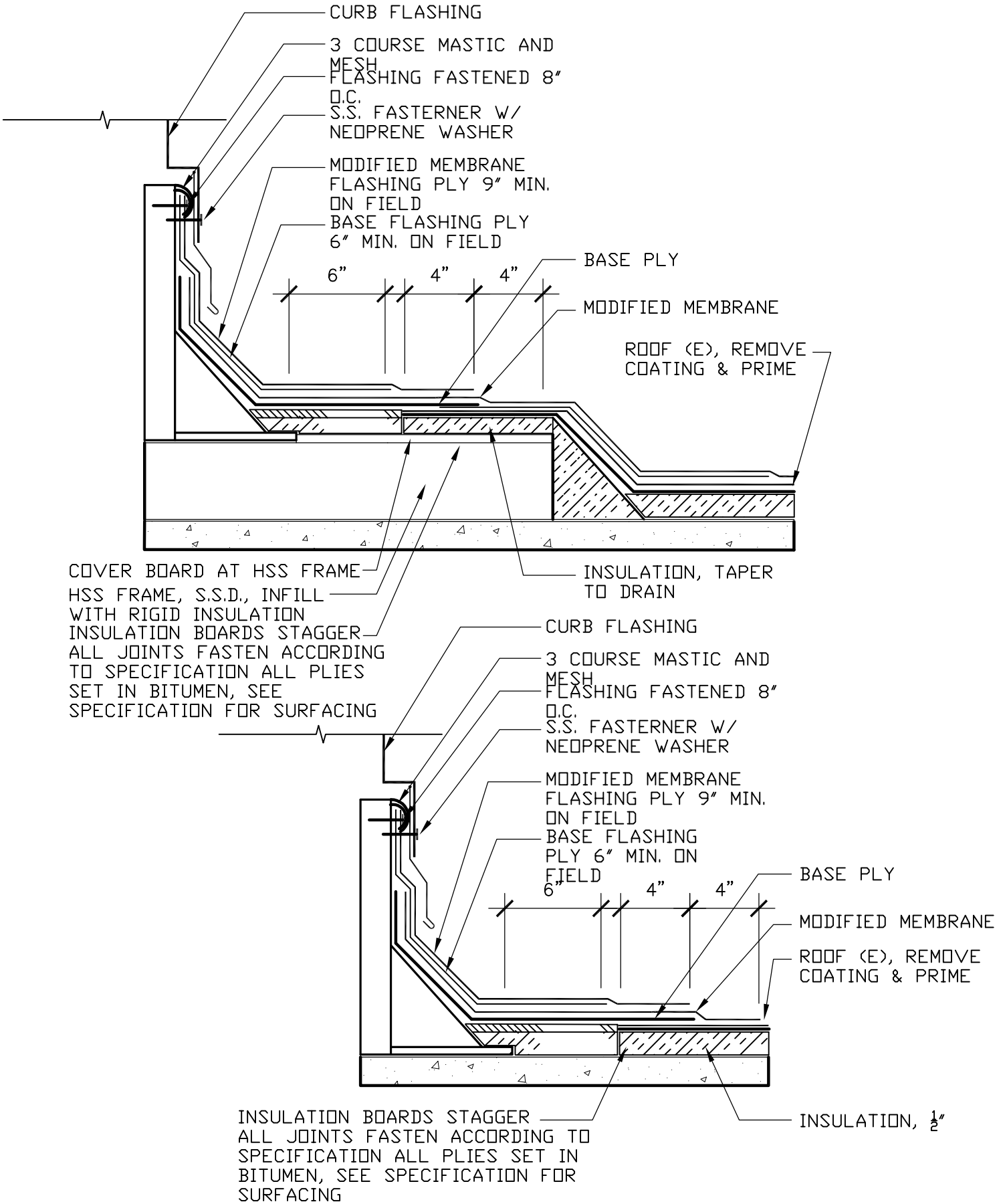
DLM HED PROJ. # 2017-03489-000

PROJECT: TERRA LINDA HIGH SCHOOL
INNOVATIONS HUB

SCALE: NTS

DATE: 12.7.18

AX1 ADD03



HED
417 Montgomery Street
Suite 400
San Francisco, CA 94104
(415) 981-2345

TITLE: MECHANICAL UNIT FLASHING

DSA APPL. # 01-117586

DLM HED PROJ. # 2017-03489-000

TERRA LINDA HIGH SCHOOL

PROJECT: INNOVATIONS HUB

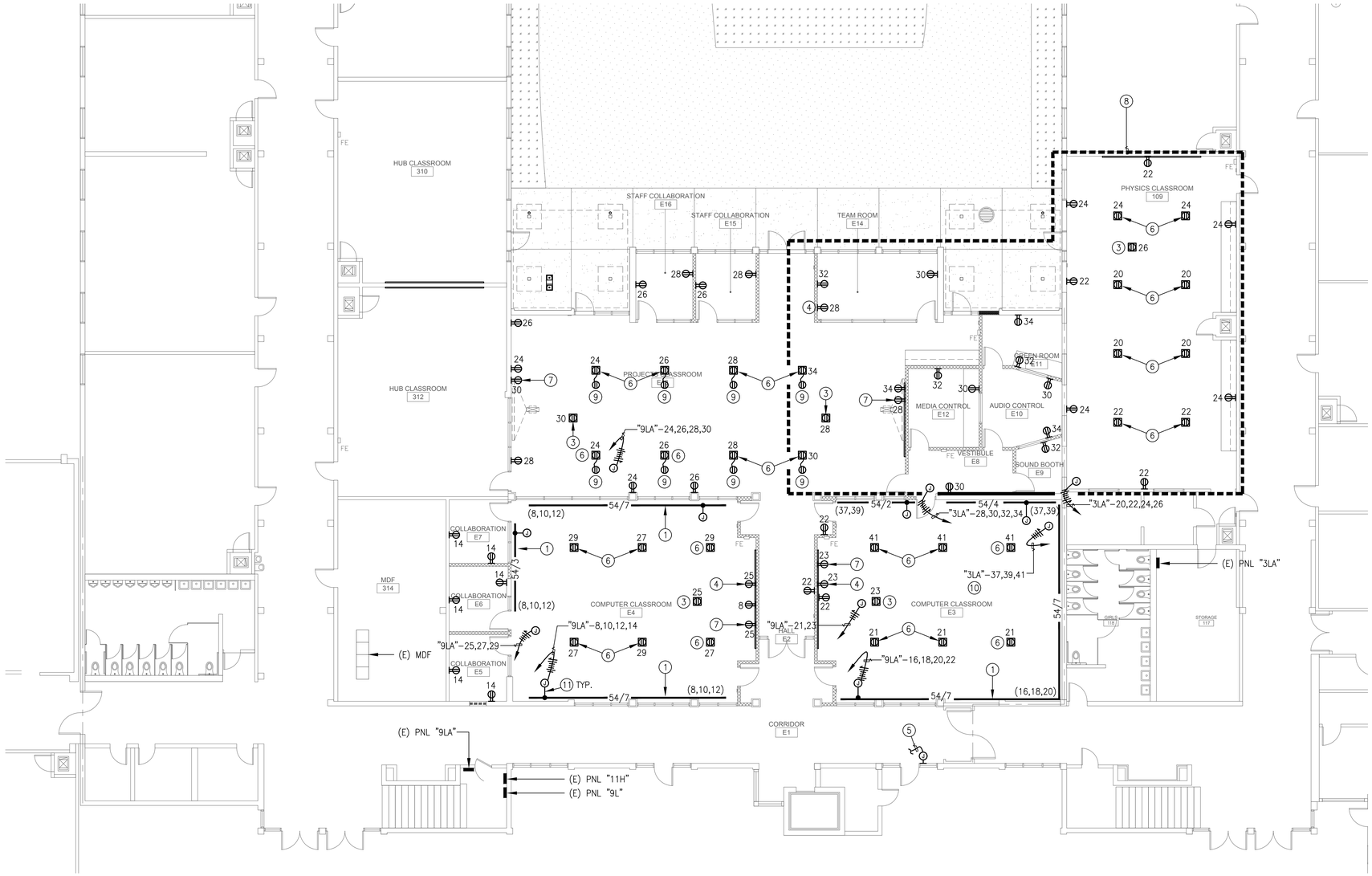
SCALE: NTS

DATE: 12.7.18

AX2 ADD03

SHEET NOTES:

1. PROVIDE STANCHION SUPPORT AND MOUNT SURFACE RACEWAY @±18" A.F.F.
2. COORDINATE WITH THE ARCHITECT FOR EXACT MOUNTING HEIGHT.
3. POWER FOR CEILING MOUNT PROJECTOR.
4. POWER FOR MONITOR.
5. POWER FOR DOOR OPERATION.
6. CEILING MOUNTED OUTLET. PROVIDE EYEBOLT ADJACENT FOR CORD REEL, PROVIDE ANCHOR POINT FOR FUTURE POWER POLE AT DROP CEILINGS.
7. POWER FOR PROJECTION SCREEN.
8. ALL CIRCUITS IN THIS AREA TO BE CONNECTED FROM (E) PANEL "3LA"
9. PROVIDE A RETRACTABLE POWER CORD REEL, HUBBELL CAT #HBLC40123TT, 15A, 125V.
10. PROVIDE (N) 20A/1P, 120V CIRCUIT BREAKERS IN (E) SPACES (TOTAL OF 3). (N) CIRCUIT BREAKER TYPE AND INTERRUPTING RATING SHALL MATCH (E).
11. VERTICAL SURFACE RACEWAY WM5400 WITHOUT DEVICES STUB-UP +6" ABOVE CEILING.



1 E2.1 POWER PLAN

SCALE: 1/8"= 1'-0"

SAN RAFAEL CITY SCHOOLS
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
06/08/2018	DSA Sumittal
11/14/2018	DSA Back check

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10
Santa Clara, CA 95054
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fax (408) 970-9316
www.aec-engineers.com

PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. WAN
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP#: 01-117586
AC FLS SS
DATE

HED
417 Montgomery Street
Suite 400
San Francisco, CA
94104 USA

(415) 981-2345

WWW.HED.DESIGN

2017-03489-000

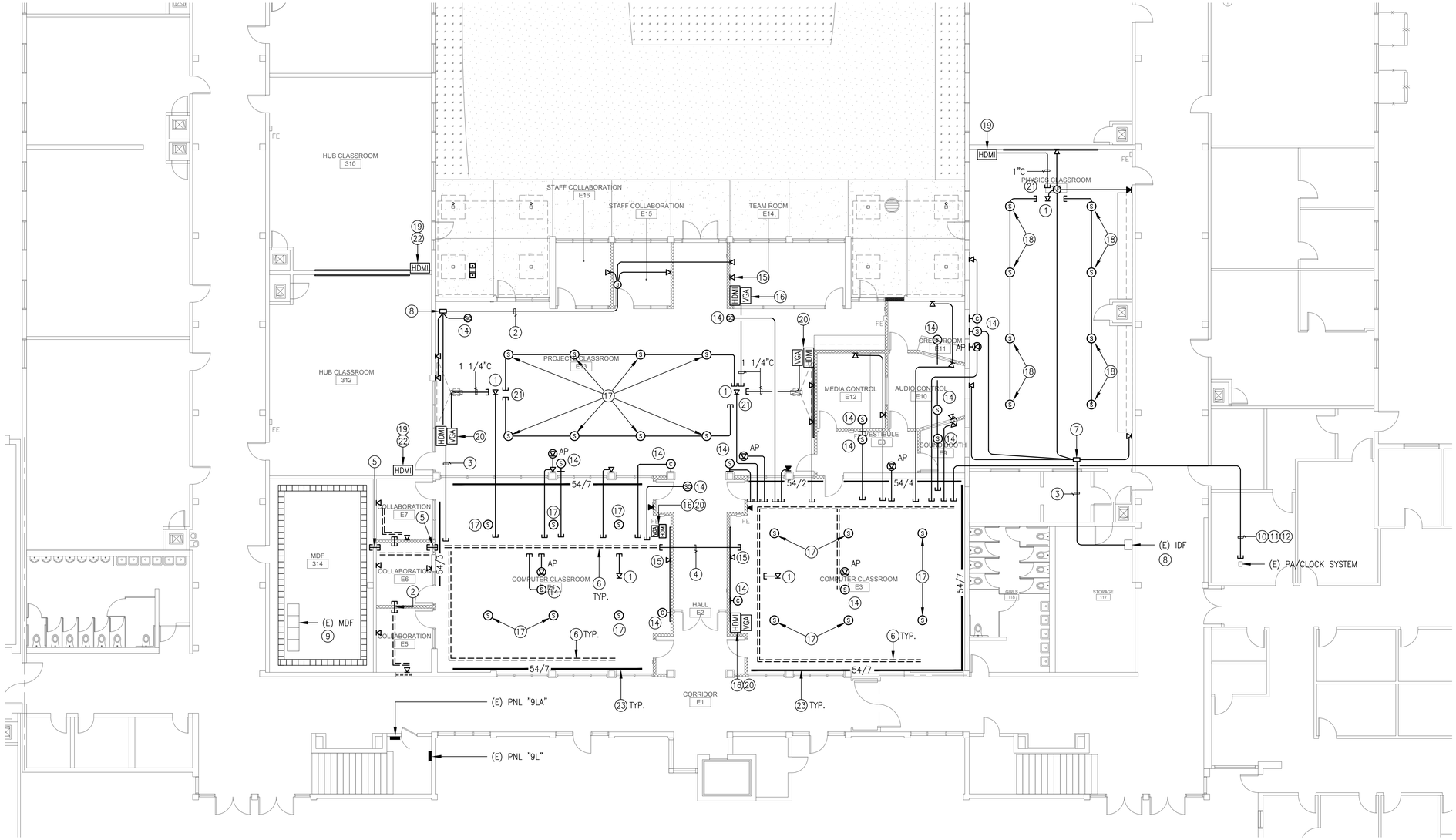
POWER PLAN

ADDENDUM 3

E2.1

SHEET NOTES:

1. DATA OUTLET FOR CEILING MOUNT PROJECTOR. COORDINATE WITH ARCHITECT FOR EXACT LOCATION.
2. 1 1/4"C (LOW VOLTAGE)
3. 1 1/2"C (LOW VOLTAGE)
4. (3) 2"C (LOW VOLTAGE)
5. (5) 2"C
6. PROVIDE CABLE SUPPORT ALONG DOUBLE LINES, CABLE SHALL BE SNAKE TRAY CAT #CM201-6-8 COMPLETE WITH SUPPORT AT 5FT. INTERVAL MAX.
7. PROVIDE 10"x8"x6" NEMA 1 PULLBOX AND SECURE ON THE WALL.
8. CONNECT (N) DATA CABLES IN (E) IDF PATCH PANEL. PROVIDE ALL NECESSARY CAT 6 PATCH CORD AS REQUIRED AND ALL OTHER DATA COMPONENTS FOR A COMPLETE INSTALLATION.
9. CONNECT (N) DATA CABLES IN (E) PATCH PANEL SPARE PORTS. PROVIDE ADDITIONAL CAT 6 PATCH PANEL (MODULAR), CAT 6/CAT6A PATCH CORD AS REQUIRED FOR A COMPETE INSTALLATION.
10. 1 1/4"C (CLOCK/SPEAKER)
11. RUN CONDUIT ABOVE CEILING AND PROVIDE CONDUIT SUPPORT AT 8FT. INTERVAL MAXIMUM.
12. IF (E) PATHWAY FOR CLOCK/PA CAN BE RE-USED, THEN NOTE (11) IS NOT REQUIRED.
13. FIELD VERIFY AND UTILIZE (E) CABLE LADDER TO RUN (N) CABLES.
14. RELOCATED ELECTRICAL ITEM AS NOTED BY BY NOTE 3 ON SHEET E2.0
15. DATA OUTLET FOR MONITOR.
16. (1) HDMI & (1) VGA INPUT FOR MONITOR.
17. CEILING SPEAKER CONNECTED TO PROJECTOR/MONITOR.
18. CEILING SPEAKER CONNECTED TO PROJECTOR.
19. ADD (1) HDMI OUTLET AND CONNECT TO (E) PROJECTOR.
20. (1) HDMI & (1) VGA INPUT FOR PROJECTOR.
21. COORDINATE WITH PROJECTOR CONTRACTOR PRIOR TO ROUGH-IN.
22. PROVIDE 1"C FROM HDMI TO (E) PROJECTOR. FIELD VERIFY FOR (E) LOCATION.
23. SURFACE RACEWAY AS SHOWN ON DWG. E2.1.



1 E3.1 SIGNAL PLAN
SCALE: 1/8"= 1'-0"

SAN RAFAEL CITY SCHOOLS
310 NOVA ALBION WAY
SAN RAFAEL, CA 94903

Terra Linda HS Innovation Hub

320 Nova Albion Way
San Rafael, CA
94903 (415) 492-3105

Date	Issued For
06/08/2018	DSA Sumittal
11/14/2018	DSA Back check

Alliance Engineering Consultants, Inc.
4701 Patrick Henry Drive, Bldg. 10 phone (408) 970-9888
Santa Clara, CA 95054 fax (408) 970-9316
www.aec-engineers.com

PROJECT NO. 101-18-03

REGISTERED PROFESSIONAL ENGINEER
KENNETH S. INGH
No. 11537
Exp. 6/30/19
ELECT.
STATE OF CALIFORNIA

FILE#: 21-H1 PTN#: 65466-28

IDENTICATION STAMP
DIV. OF THE STATE ARCHITECT
APP#: 01-117586
AC___ FLS___ SS___
DATE___

HED
417 Montgomery Street
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94104 USA

(415) 981-2345

WWW.HED.DESIGN

2017-03489-000

SIGNAL PLAN
ADDENDUM 3

E3.1